

TPC Benchmark™ H Full Disclosure Report
for
MAXDATA® PLATINUM™ 9000-4R
using
IBM DB2® Universal Database 8.1

Submitted for Review

July 3, 2003

MAXDATA
REAL HARD WARE

First Edition – July, 2003

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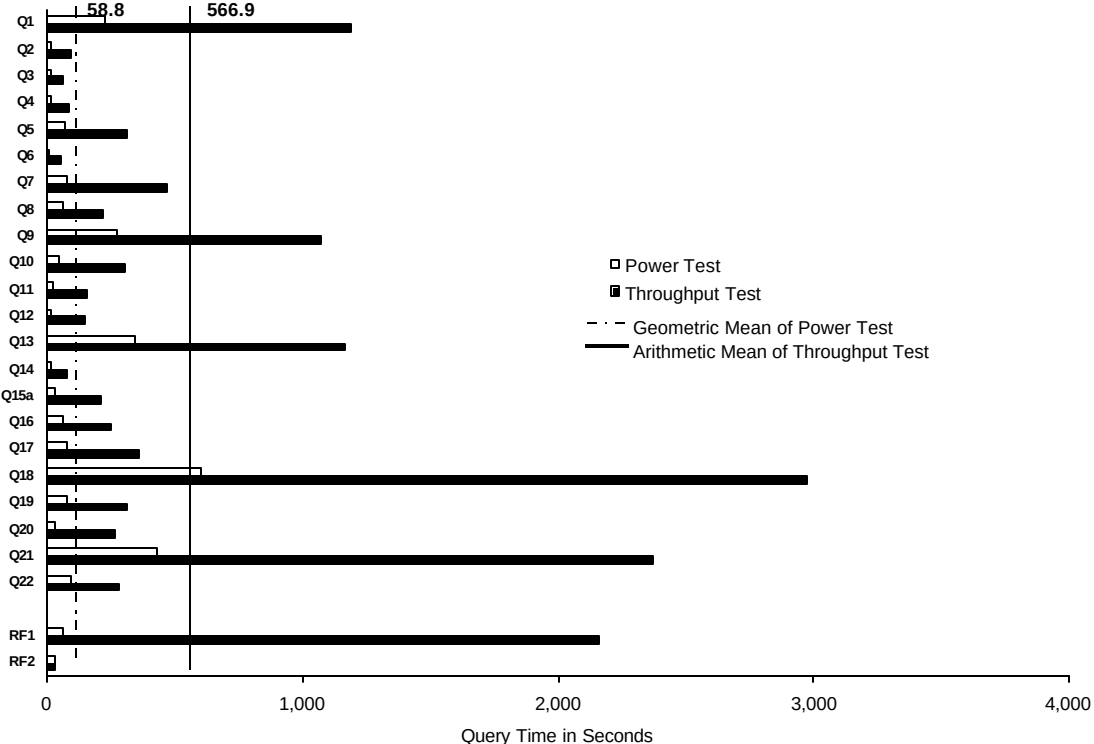
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Notes

¹ GHz only measures microprocessor internal clock speed, not application performance. Many factors affect application performance.

² When referring to hard disk capacity, one GB equals one billion bytes. Total user-accessible capacity may be less.

		MAXDATA[®] PLATINUM[™] 9000-4R with IBM DB2[®] UDB 8.1		TPC-H Rev 2.0
				Report Date: July 3, 2003
Total System Cost		Composite Query-per-hour Metric		Price/Performance
302,451 €		4,307.5 QphH@100GB		70 € per QphH@100GB
Database Size	Database Manager	Operating System	Other Software	Availability Date
100GB	IBM DB2 UDB 8.1	Microsoft Windows Server 2003 Enterprise Edition	Microsoft Platform SDK	November 8, 2003
 Legend: □ Power Test ■ Throughput Test --- Geometric Mean of Power Test — Arithmetic Mean of Throughput Test				
Database Load Time: 02:10:10		Load Included Backup: Y		Total Data Storage / Database Size: 19.82
RAID (Base Table only): N		RAID (Base Tables and Auxiliary Data Structures): N		RAID (ALL): Only for logs
Configuration				
Processors	4	Intel Itanium 2 Processor 1.5 GHz / 6 MB L3 Cache		
Memory	16	2 GB DDR DIMM		
Disk Controllers	4	QLogic QLA2342 FibreChannel HBA		
Disk Drives	112	18 GB 15K RPM FibreChannel Drives		
	2	36 GB 15K RPM Ultra160 SCSI Drives		
Total Disk Storage		1982.48 GB		



MAXDATA[®] PLATINUM[™]
9000-4R with
IBM DB2[®] UDB 8.1

TPC-H Revision 2.0

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Measurement Results:

Database Scale Factor	100
Total Data Storage/Database Size	19.82
Start of Database Load	17:46:03
End of Database Load	19:56:13
Database Load Time	02:10:10
Query Streams for Throughput Test	5
TPC-H Power	6122.1
TPC-H Throughput	3030.8
TPC-H Composite Query-per-Hour (QphH@100GB)	4307.5
Total System Price over 3 Years	302,451 €
TPC-H Price/Performance Metric (€/QphH@100GB)	70 €

Measurement Interval:

Measurement Interval in Throughput Test (Ts) = 13,066 seconds

Duration of Stream Execution:

	Seed	Query Start Date/Time Query End Date/Time	RF1 Start Date/Time RF1 End Date/Time	RF2 Start Date/Time RF2 End Date/Time	Duration
Stream 00	625195613	06/26/03 00:32:32	06/26/03 00:31:30	06/26/03 01:16:34	0:44:36
		06/26/03 01:16:34	06/26/03 00:32:32	06/26/03 01:17:08	
Stream 01	625195614	06/26/03 01:17:33	06/26/03 01:17:30	06/26/03 04:47:29	3:30:30
		06/26/03 04:44:06	06/26/03 04:47:29	06/26/03 04:48:03	
Stream 02	625195615	06/26/03 01:17:33	06/26/03 04:48:03	06/26/03 04:49:17	3:32:17
		06/26/03 04:46:18	06/26/03 04:49:17	06/26/03 04:49:50	
Stream 03	625195616	06/26/03 01:17:33	06/26/03 04:49:50	06/26/03 04:51:04	3:34:04
		06/26/03 04:44:52	06/26/03 04:51:04	06/26/03 04:51:37	
Stream 04	625195617	06/26/03 01:17:33	06/26/03 04:51:37	06/26/03 04:52:54	3:35:55
		06/26/03 04:45:21	06/26/03 04:52:54	06/26/03 04:53:28	
Stream 05	625195618	06/26/03 01:17:33	06/26/03 04:53:28	06/26/03 04:54:46	3:37:46
		06/26/03 04:46:23	06/26/03 04:54:46	06/26/03 04:55:19	



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TPC-H Timing Intervals (in seconds):

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	229.6	19.0	16.1	14.5	72.6	12.4	81.7	65.1	273.7	47.1	20.9	19.9
Stream 01	1,179.8	56.4	47.4	75.8	209.6	96.2	492.6	205.3	833.3	248.7	208.4	92.7
Stream 02	977.1	83.0	76.1	27.6	186.7	52.6	548.1	207.6	880.4	334.1	171.3	98.8
Stream 03	775.8	104.1	28.9	94.2	386.7	40.9	486.7	235.6	1,427.3	246.9	128.8	49.8
Stream 04	853.6	57.6	71.0	114.6	516.0	54.3	394.5	160.5	1,598.3	467.3	107.8	257.3
Stream 05	2,148.9	174.3	89.8	124.4	280.9	40.8	412.5	295.4	644.5	230.0	164.5	259.8
Minimum	775.8	56.4	28.9	27.6	186.7	40.8	394.5	160.5	644.5	230.0	107.8	49.8
Average	1,187.0	95.1	62.6	87.3	316.0	57.0	466.9	220.9	1,076.8	305.4	156.2	151.7
Maximum	2,148.9	174.3	89.8	124.4	516.0	96.2	548.1	295.4	1,598.3	467.3	208.4	259.8

Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	343.8	14.7	30.9	64.2	77.1	600.4	81.0	35.6	428.2	93.2	62.1	33.7
Stream 01	729.6	56.1	385.9	188.9	241.0	3,694.4	243.9	276.7	2,294.0	536.5	12,598.8	33.7
Stream 02	1,366.8	55.3	82.8	160.3	342.6	3,963.7	340.8	138.0	2,228.8	202.4	73.9	33.7
Stream 03	1,750.1	58.6	131.2	155.9	460.1	3,108.0	345.4	147.8	2,098.3	178.9	73.2	33.7
Stream 04	1,254.6	69.4	165.5	313.6	399.1	2,507.8	280.1	106.5	2,492.7	225.9	76.6	33.7
Stream 05	753.8	145.1	310.9	452.9	349.5	1,583.5	360.6	658.6	2,760.8	289.0	78.0	33.7
Minimum	729.6	55.3	82.8	155.9	241.0	1,583.5	243.9	106.5	2,098.3	178.9	73.2	33.7
Average	1,171.0	76.9	215.3	254.3	358.5	2,971.5	314.2	265.5	2,374.9	286.5	2,162.3	33.7
Maximum	1,750.1	145.1	385.9	452.9	460.1	3,963.7	360.6	658.6	2,760.8	536.5	12,598.8	33.7

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Preface

TPC Benchmark H Standard Specification was developed by the Transaction Processing Performance Council (TPC). It was released on February 26, 1999, and most recently revised (Revision 2.0) October 29, 2002. This is the full disclosure report for benchmark testing of the MAXDATA PLATINUM 9000-4R according to the TPC Benchmark H Standard Specification.

The TPC Benchmark H is a decision support benchmark. It consists of a suite of business-oriented ad hoc queries and concurrent data modifications. The queries and the data populating the database have been chosen to have broad industrywide relevance while maintaining a sufficient degree of ease of implementation. This benchmark illustrates decision support systems that:

- Examine large volumes of data;
- Execute queries with a high degree of complexity;
- Give answers to critical business questions.

TPC-H evaluates the performance of various decision support systems by the execution of set of queries against a standard database under controlled conditions. The TPC-H queries:

- Give answers to real-world business questions;
- Simulate generated ad-hoc queries (e.g., via a point-and-click GUI interface);
- Are far more complex than most OLTP transactions;
- Include a rich breadth of operators and selectivity constraints;
- Generate intensive activity on the part of the database server component of the system under test;
- Are executed against a database complying with specific population and scaling requirements;
- Are implemented with constraints derived from staying closely synchronized with an on-line production database.

The TPC-H operations are modeled as follows:

- The database is continuously available 24 hours a day, 7 days a week, for ad-hoc queries from multiple end users and data modifications against all tables, except possibly during infrequent (e.g., once a month) maintenance sessions.
- The TPC-H database tracks, possibly with some delay, the state of the OLTP database through ongoing refresh functions, which batch together a number of modifications impacting some part of the decision support database.
- Due to the worldwide nature of the business data stored in the TPC-H database, the queries and the refresh functions may be executed against the database at any time, especially in relation to each other. In addition, this mix of queries and refresh functions is subject to specific ACIDity requirements, since queries and refresh functions may execute concurrently.
- To achieve the optimal compromise between performance and operational requirements, the database administrator can set, once and for all, the locking levels and the concurrent scheduling rules for queries and refresh functions.

The minimum database required to run the benchmark holds business data from 10,000 suppliers. It contains almost 10 million rows representing a raw storage capacity of about 1 gigabyte. Compliant benchmark implementations may also use one of the larger permissible database populations (e.g., 100 gigabytes), as defined in Clause 4.1.3).

The performance metrics reported by TPC-H is called the TPC-H Composite Query-per-Hour Performance Metric (QphH@Size), and reflects multiple aspects of the capability of the system to process queries. These aspects include the selected database size against which the queries are executed, the query processing power when queries are submitted by a single stream, and the query throughput when queries are submitted by multiple concurrent users. The TPC-H Price/Performance metric is expressed as \$/QphH@Size. To be compliant with the TPC-H standard, all references to TPC-H results for a given configuration must include all required reporting components (see Clause 5.4.6). The TPC believes that comparisons of TPC-H results measured against different database sizes are misleading and discourages such comparisons.

The TPC-H database must be implemented using a commercially available database management system (DBMS), and the queries executed via an interface using dynamic SQL. The specification provides for variants of SQL, as implementers are not required to have implemented a specific SQL standard in full.

Benchmarks results are highly dependent upon workload, specific application requirements, and systems design and implementation. Relative system performance will vary as a result of these and other factors. Therefore, TPC-H should not be used as a substitute for specific customer application benchmarking when critical capacity planning and/or product evaluation decisions are contemplated.

1 General Items

1.1 Benchmark Sponsor

A statement identifying the benchmark sponsor(s) and other participating companies must be provided.

MAXDATA Computer GmbH&Co.KG sponsored this TPC-H benchmark.

1.2 Parameter Settings

Settings must be provided for all customer-tunable parameters and options that have been changed from the defaults found in actual products, including but not limited to:

- Database tuning options
- Optimizer/Query execution options
- Query Processing tool/language configuration parameters
- Recovery/commit options
- Consistency/locking options
- Operating system and configuration parameters
- Configuration parameters and options for any other software component incorporated into the pricing structure
- Compiler optimization options.

Appendix A, “Tunable Parameters,” contains a list of all DB2 parameters and operating system parameters. Session initialization parameters can be set during or immediately after establishing the connection to the database within the tpcdbatch program documented in Appendix D, “Driver Source Code.” This result uses the default session initialization parameters established during preprocessing/binding of the tpcdbatch program.

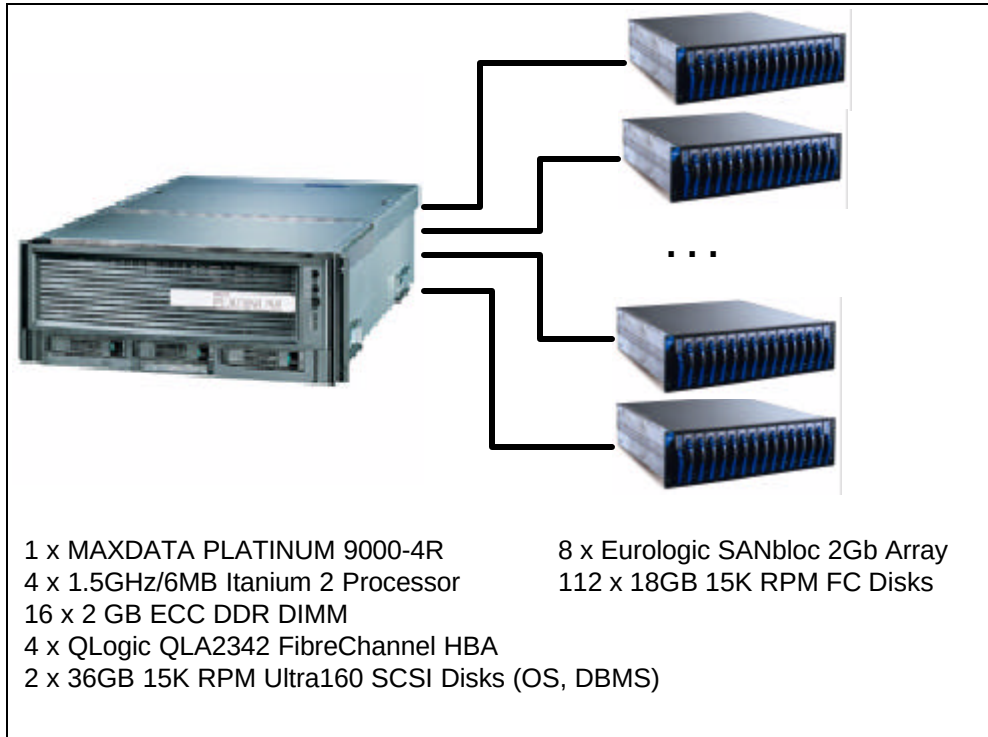
1.3 Configuration Diagrams

Diagrams of both measured and priced configurations must be provided, accompanied by a description of the differences. This includes, but is not limited to:

- Number and type of processors
- Size of allocated memory and any specific mapping/partitioning of memory unique to the test and type of disk units (and controllers, if applicable)
- Number and type of disk units (and controllers, if applicable)
- Number of channels or bus connections to disk units, including their protocol type
- Number of LAN (e.g., Ethernet) connections, including routers, workstations, terminals, etc., that were physically used in the test or are incorporated into the pricing structure
- Type and run-time execution location of software components (e.g., DBMS, query processing tools/languages, middleware components, software drivers, etc.).

The configuration diagram for the tested and priced system is provided on the following page.

1.3.1 Priced and Measured Configurations



The priced configuration for the MAXDATA PLATINUM 9000-4R contained:

- Four Intel Itanium 2 processors, 1.5 GHz, each with 6 MB of L3 cache
- 32 GB of memory
- Four (4) QLogic QLA2342 FC adapters – 2 port
- Eight (8) Eurologic 14-slot Rackmount SANbloc FC2100 2Gb Arrays
- One hundred twelve (112) 18.3GB 15K RPM Fibre Channel Disk Drives
- One Eurologic 19" 30U Enclosure
- Two (2) 36.7GB 15K Ultra160 SCSI Disk Drives
- One embedded SCSI interface

The measured configuration was different in that it contained one additional EMC CLARiiON C5051D Storage unit, which held ten 18.2GB 15K FC drives that held raw data files. A fifth QLogic 2200 adapter was used to attach these drives. This hardware was not priced.

2 Clause 1: Logical Database Design Related Items

2.1 Database Table Definitions

Listings must be provided for all table definition statements and all other statements used to set up the test and qualification databases. (8.1.2.1)

Appendix B contains the scripts that were used to set up the TPC-H test and qualification databases.

2.2 Database Organization

The physical organization of tables and indexes within the test and qualification databases must be disclosed. If the column ordering of any table is different from that specified in Clause 1.4, it must be noted.

Appendix B contains the scripts that were used to create the indexes on the test and qualification databases.

2.3 Horizontal Partitioning

Horizontal partitioning of tables and rows in the test and qualification databases must be disclosed (see Clause 1.5.4).

Horizontal partitioning was used for all tables except for the nation and region tables. See Appendix B, “Database Build Scripts.”

2.4 Replication

Any replication of physical objects must be disclosed and must conform to the requirements of Clause 1.5.6).

No replication was used.

3 Clause 2: Queries and Update Functions Related Items

3.1 Query Language

The query language used to implement the queries must be identified.

SQL was the query language used.

3.2 Random Number Generation

The method of verification for the random number generation must be described unless the supplied DBGEN and QGEN were used.

The TPC-supplied DBGEN version 1.3.0 and QGEN version 1.3.0 were used to generate all database populations.

3.3 Substitution Parameters Generation

The method used to generate values for substitution parameters must be disclosed. If QGEN is not used for this purpose, then the source code of any non-commercial tool used must be disclosed. If QGEN is used, the version number, release number, modification number and patch level of QGEN must be disclosed.

The supplied QGEN version 1.3.0 was used to generate the substitution parameters.

3.4 Query Text and Output Data from Database

The executable query text used for query validation must be disclosed along with the corresponding output data generated during the execution of the query text against the qualification database. If minor modifications (see Clause 2.2.3) have been applied to any functional query definitions or approved variants in order to obtain executable query text, these modifications must be disclosed and justified. The justification for a particular minor query modification can apply collectively to all queries for which it has been used. The output data for the power and throughput tests must be made available electronically upon request.

Appendix C.1, “Qualification Queries,” contains the output for each of the queries. The functional query definitions and variants used in this disclosure use the following minor query modifications:

- Table names and view names are fully qualified. For example, the nation table is referred to as “TPCD.NATION.”
- The standard IBM SQL date syntax is used for date arithmetic. For example, DATE(‘1996-01-01’)+3 MONTHS.
- The semicolon (;) is used as a command delimiter.

3.5 Query Substitution Parameters and Seeds Used

All query substitution parameters used for all performance tests must be disclosed in tabular format, along with the seeds used to generate these parameters.

Appendix C contains the seed and query substitution parameters used.

3.6 Query Isolation Level

The isolation level used to run the queries must be disclosed. If the isolation level does not map closely to one of the isolation levels defined in Clause 3.4, additional descriptive detail must be provided.

The isolation level used to run the queries was “repeatable read.”

3.7 Refresh Function Implementation

The details of how the refresh functions were implemented must be disclosed (including source code of any non-commercial program used).

The refresh functions are part of the implementation-specific layer/driver code included in Appendix D, “Driver Source Code.”

4 Clause 3: Database System Properties Related Items

The results of the ACID tests must be disclosed, along with a description of how the ACID requirements were met. This includes disclosing the code written to implement the ACID Transaction and Query.

All ACID tests were conducted according to specifications. The Atomicity, Isolation, Consistency and Durability tests were performed on the MAXDATA PLATINUM 9000-4R. Appendix E contains the ACID transaction source code.

4.1 Atomicity Requirements

The system under test must guarantee that transactions are atomic; the system will either perform all individual operations on the data, or will assure that no partially completed operations leave any effects on the data.

4.1.1 Atomicity of Completed Transactions

Perform the ACID transactions for a randomly selected set of input data and verify that the appropriate rows have been changed in the ORDER, LINEITEM and HISTORY tables.

The following steps were performed to verify the Atomicity of completed transactions.

1. The total price from the ORDER table and the extended price from the LINEITEM table were retrieved for a randomly selected order key. The number of records in the HISTORY table was also retrieved.
2. The ACID Transaction T1 was executed for the order key used in step 1.
3. The total price and extended price were retrieved for the same order key used in step 1 and step 2.

It was verified that:

$$T1.EXTENDEDPRICE = OLD.EXTENDEDPRICE + ((T1.DELTA) * (OLD.EXTENDEDPRICE / OLD.QUANTITY)), T1.TOTALPRICE = OLD.TOTALPRICE + ((T1.EXTENDEDPRICE - OLD.EXTENDEDPRICE) * (1 - DISCOUNT) * (1 + TAX)),$$
 and that

the number of records in the History table had increased by 1.

4.1.2 Atomicity of Aborted Transactions

Perform the ACID transactions for a randomly selected set of input data, and verify that the appropriate rows have been changed in the ORDER, LINEITEM and HISTORY tables.

The following steps were performed to verify the Atomicity of the aborted ACID transaction:

1. The ACID application is passed a parameter to execute a rollback of the transaction instead of performing the commit.
2. The total price from the ORDER table and the extended price from the LINEITEM table were retrieved for a random order key. The number of records in the HISTORY table was also retrieved.
3. The ACID transaction was executed for the orderkey used in step 2. The transaction was rolled back.
4. The total price and the extended price were retrieved for the same orderkey used in step 2 and step 3. It was verified that the extended price and the total price were the same as in step 2.

4.2 Consistency Requirements

Consistency is the property of the application that requires any execution of transactions to take the database from one consistent state to another.

4.2.1 Consistency Condition

A consistent state for the TPC-H database is defined to exist when:

$$O_TOTALPRICE = SUM(L_EXTENDEDPRICE * (1 - L_DISCOUNT) * (1 + L_TAX))$$

for each ORDER and LINEITEM defined by $(O_ORDERKEY = L_ORDERKEY)$

The following queries were executed before and after a measurement to show that the database was always in a consistent state both initially and after a measurement.

```
SELECT DECIMAL(SUM(DECIMAL(INTEGER(INTEGER(DECIMAL
(INTEGER(100*DECIMAL(L_EXTENDEDPRICE,20,2)),20,3)*
(1-L_DISCOUNT))*(1+L_TAX)),20,3)/100.0),20,3)
FROM TPCD.LINEITEM WHERE L_ORDEYKEY=okey
SELECT DECIMAL(SUM(O_TOTALPRICE,20,3)) from TPCD.ORDERS WHERE
O_ORDERKEY = okey
```

4.2.2 Consistency Tests

Verify that the ORDER and LINEITEM tables are initially consistent as defined in Clause 3.3.2.1, based on a random sample of at least 10 distinct values of O_ORDERKEY.

The queries defined in 4.2.1, “Consistency Condition,” were run after initial database build and prior to executing the ACID transaction. The queries showed that the database was in a consistent condition.

After executing 7 streams of 100 ACID transactions each, the queries defined in 4.2.1, “Consistency Condition,” were run again. The queries showed that the database was still in a consistent state.

4.3 Isolation Requirements

4.3.1 Isolation Test 1

This test demonstrates isolation for the read-write conflict of a read-write transaction and a read-only transaction when the read-write transaction is committed.

The following steps were performed to satisfy the test of isolation for a read-only and a read-write committed transaction:

1. First session: Start an ACID transaction with a randomly selected O_KEY, L_KEY and DELTA. The transaction is delayed for 60 seconds just prior to the Commit.
2. Second session: Start an ACID query for the same O_KEY as in the ACID transaction.
3. Second session: The ACID query attempts to read the file but is locked out by the ACID transaction waiting to complete.
4. First session: The ACID transaction is released and the Commit is executed releasing the record. With the LINEITEM record now released, the ACID query can now complete.
5. Second session: Verify that the ACID query delays for approximately 60 seconds and that the results displayed for the ACID query match the input for the ACID transaction.

4.3.2 Isolation Test 2

This test demonstrates isolation for the read-write conflict of read-write transaction and read-only transaction when the read-write transaction is rolled back.

The following steps were performed to satisfy the test of isolation for read-only and a rolled back read-write transaction:

1. First session: Perform the ACID transaction for a random O_KEY, L_KEY and DELTA. The transaction is delayed for 60 seconds just prior to the Rollback.
2. Second session: Start an ACID query for the same O_KEY as in the ACID transaction. The ACID query attempts to read the LINEITEM table but is locked out by the ACID transaction.
3. First session: The ACID transaction is released and the Rollback is executed, releasing the read.
4. Second session: With the LINEITEM record now released, the ACID query completes.

4.3.3 Isolation Test 3

This test demonstrates isolation for the write-write conflict of two refresh transactions when the first transaction is committed.

The following steps were performed to verify isolation of two refresh transactions:

1. First session: Start an ACID transaction T1 for a randomly selected O_KEY, L_KEY and DELTA. The transaction is delayed for 60 seconds just prior to the COMMIT.
2. Second session: Start a second ACID transaction T2 for the same O_KEY, L_KEY, and for a randomly selected DELTA2. This transaction is forced to wait while the 1st session holds a lock on the LINEITEM record requested by the second session.
3. First session: The ACID transaction T1 is released and the Commit is executed, releasing the record. With the LINEITEM record now released, the ACID transaction T2 can now complete.
4. Verify that:

$$T2.L_EXTENDEDPRICE = T1.L_EXTENDEDPRICE + DELTA * (T1.L_EXTENDEDPRICE / T1.L_QUANTITY)$$

4.3.4 Isolation Test 4

This test demonstrates isolation for write-write conflict of two ACID transactions when the first transaction is rolled back.

The following steps were performed to verify the isolation of two ACID transactions after the first one is rolled back:

1. First session: Start an ACID transaction T1 for a randomly selected O_KEY, L_KEY, and DELTA. The transaction is delayed for 60 seconds just prior to the rollback.
2. Second session: Start a second ACID transaction T2 for the same O_KEY, L_KEY used by the 1st session. This transaction is forced to wait while the 1st session holds a lock on the LINEITEM record requested by the second session.
3. First session: Rollback the ACID transaction T1. With the LINEITEM record now released, the ACID transaction T2 completes.
4. Verify that $T2.L_EXTENDEDPRICE = T1.L_EXTENDEDPRICE$

4.3.5 Isolation Test 5

This test demonstrates the ability of read and write transactions affecting different database tables to make progress concurrently.

1. First session: Start an ACID transaction, T1, for a randomly selected O_KEY, L_KEY and DELTA. The ACID transaction was suspended prior to COMMIT.
2. First session: Start a second ACID transaction, T2, which selects random values of PS_PARTKEY and PS_SUPPKEY and returns all columns of the PARTSUPP table for which PS_PARTKEY and PS_SUPPKEY are equal to the selected values.
3. T2 completed.
4. T1 was allowed to complete.
5. It was verified that the appropriate rows in the ORDERS, LINEITEM and HISTORY tables have been changed.

4.3.6 Isolation Test 6

This test demonstrates that the continuous submission of arbitrary (read-only) queries against one or more tables of the database does not indefinitely delay refresh transactions affecting those tables from making progress.

1. First session: A transaction T1, which executes modified TPC-H query 1 with DELTA=0, was started.
2. Second session: Before T1 completed, an ACID transaction T2, with randomly selected values of O_KEY, L_KEY and DELTA, was started.
3. Third session: Before T1 completed, a transaction T3, which executes modified TPC-H query 1 with a randomly selected value of DELTA (not equal to 0), was started.
4. T1 completed.
5. T2 completed.
6. T3 completed.
7. It was verified that the appropriate rows in the ORDERS, LINEITEM and HISTORY tables were changed.

4.4 Durability Requirements

The SUT must guarantee durability: the ability to preserve the effects of committed transactions and ensure database consistency after recovery from any one of the failures listed in Clause 3.5.3.

4.4.1 Failure of a Durable Medium

Guarantee the database and committed updates are preserved across a permanent irrecoverable failure of any single durable medium containing TPC-H database tables or recovery log tables.

The database log was stored on Windows mirrored volume. The tables for the database were stored on non-RAID storage. Backup of the database was taken in a way in which the backup for one logical node and the data itself in that logical node were separated in different set of hard drives, and by which it was well guarded that backup and database itself for one logical node would not go bad at same time if one hard drive failed.

The tests were conducted on the qualification database. The steps performed are shown below.

1. The complete database was backed up once. The backup of the data was not on the same drive as the data itself.
2. Six streams of ACID transactions were started. Each stream executed a minimum of 100 transactions.
3. One of physical drives with data populated was removed.
4. The six streams of ACID transactions failed and recorded their number of committed transactions in success files.
5. The failed disk was replaced with a new drive. The database data partitions containing the failed disk were deleted and recreated. The junction points were recreated.
6. A database restore was issued using the backup taken at the beginning of this test.
7. A command was issued causing the database to run through its roll-forward recovery.
8. The counts in the success files and the HISTORY table count were compared and were found to match.

4.4.2 Loss of Log

Guarantee the database and committed updates are preserved across a permanent irrecoverable failure of any single durable medium containing TPC-H database tables or recovery log tables.

1. Six streams of ACID transactions were started. Each stream executed a minimum of 100 transactions.
2. While the test was running, one of the disks from the mirrored database log on Node 0 was removed. In Windows Disk Management, the volume was marked with "Failed Redundancy".
3. The test continued running for an additional 100 transactions per stream.

4. The success file and the HISTORY table counts were compared and were found to match.
5. The database log disk was replaced with a new drive and the mirrored volume was re-synched.

4.4.3 System Crash

Guarantee the database and committed updates are preserved across an instantaneous interruption (system crash/system hang) in processing which requires the system to reboot to recover.

1. Six streams of ACID transactions were started. Each stream executed a minimum of 100 transactions.
2. Then the system was powered off.
3. When power was restored, the system rebooted and the database was restarted.
4. The database went through a recovery period.
5. The success file and the HISTORY table counts were compared and were found to match.

4.4.4 Memory Failure

Guarantee the database and committed updates are preserved across failure of all or part of memory (loss of contents).

See the previous section.

5 Clause 4: Scaling and Database Population Related Items

5.1 Cardinality of Tables

The cardinality (e.g., the number of rows) of each table of the test database, as it existed at the completion of the database load (see Clause 4.2.5), must be disclosed.

Table Name	Rows
Order	150,000,000
Lineitem	600,037,902
Customer	15,000,000
Part	20,000,000
Supplier	1,000,000
Partsupp	80,000,000
Nation	25
Region	5

5.2 Distribution of Tables and Logs

The distribution of tables and logs across all media must be explicitly described.

The following series of tables show the distribution of tables and logs across all media.

Controller / Port	Disk Enclosure	Disks	Use
Controller 0 / Port 0	1	0 – 13	Node 0
Controller 0 / Port 1	2	14 – 27	
Controller 1 / Port 0	3	28 – 41	Node 1
Controller 1 / Port 1	4	42 – 55	
Controller 2 / Port 0	5	56 – 69	Node 2
Controller 2 / Port 1	6	70 – 83	
Controller 3 / Port 0	7	84 – 97	Node 3
Controller 3 / Port 1	8	98 - 111	

			COMMON MOUNT PATH	LINEITEM TABLE (1GB)	LINEITEM INDEXES (1GB)	OTHER TABLES (1GB)	OTHER INDEXES (1GB)	TEMP TABLE (2GB)	BACKUP (2GB)	UNUSED (9GB)
Node 0	Enclosure 1	Disk0	D:\MP\Disk000	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	13x2GB (Drive J:) Backup Storage for Node 3	empty
		Disk1	D:\MP\Disk001	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk2	D:\MP\Disk002	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk3	D:\MP\Disk003	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk4	D:\MP\Disk004	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk5	D:\MP\Disk005	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk6	D:\MP\Disk006	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk7	D:\MP\Disk007	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk8	D:\MP\Disk008	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty

Node 1	Enclosure 2	Disk9	D:\MP\Disk009	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	13x2GB (Drive J:) Backup Storage for Node 3	empty
		Disk10	D:\MP\Disk010	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk11	D:\MP\Disk011	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk12	D:\MP\Disk012	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk13		Mirror 0 Drive F: Log File for Node 0						
	Disk14	D:\MP\Disk014	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	13x2GB (Drive J:) Backup Storage for Node 3	empty	
	Disk15	D:\MP\Disk015	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk16	D:\MP\Disk016	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk17	D:\MP\Disk017	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk18	D:\MP\Disk018	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk19	D:\MP\Disk019	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk20	D:\MP\Disk020	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk21	D:\MP\Disk021	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk22	D:\MP\Disk022	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk23	D:\MP\Disk023	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk24	D:\MP\Disk024	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk25	D:\MP\Disk025	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk26	D:\MP\Disk026	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
	Disk27		Mirror 1 Drive F: Log File for Node 0							
	Enclosure 3	Disk28	D:\MP\Disk028	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	13x2GB (Drive K:) Backup Storage for Node 0	empty
		Disk29	D:\MP\Disk029	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk30	D:\MP\Disk030	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk31	D:\MP\Disk031	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk32	D:\MP\Disk032	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk33	D:\MP\Disk033	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk34	D:\MP\Disk034	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
		Disk35	D:\MP\Disk035	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
Disk36		D:\MP\Disk036	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
Disk37		D:\MP\Disk037	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
Disk38		D:\MP\Disk038	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
Disk39		D:\MP\Disk039	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
Disk40		D:\MP\Disk040	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
Disk41			Mirror 0 Drive G: Log File for Node 1							
Enclosure 4	Disk42	D:\MP\Disk042	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	13x2GB (Drive K:) Backup Storage for Node 0	empty	
	Disk43	D:\MP\Disk043	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk44	D:\MP\Disk044	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk45	D:\MP\Disk045	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk46	D:\MP\Disk046	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk47	D:\MP\Disk047	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk48	D:\MP\Disk048	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk49	D:\MP\Disk049	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk50	D:\MP\Disk050	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk51	D:\MP\Disk051	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
	Disk52	D:\MP\Disk052	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	

Node 2		Disk53	D:\MP\Disk053	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk54	D:\MP\Disk054	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk55		Mirror 1 Drive G: Log File for Node 1							
	Enclosure 5	Disk56	D:\MP\Disk056	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	13x2GB (Drive L:) Backup Storage for Node 1	empty	
		Disk57	D:\MP\Disk057	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk58	D:\MP\Disk058	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk59	D:\MP\Disk059	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk60	D:\MP\Disk060	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk61	D:\MP\Disk061	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk62	D:\MP\Disk062	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk63	D:\MP\Disk063	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk64	D:\MP\Disk064	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk65	D:\MP\Disk065	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk66	D:\MP\Disk066	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk67	D:\MP\Disk067	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk68	D:\MP\Disk068	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk69	D:\MP\Disk069	Mirror 0 Drive H: Log File for Node 2							
		Enclosure 6	Disk70	D:\MP\Disk070	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	13x2GB (Drive L:) Backup Storage for Node 1	empty
			Disk71	D:\MP\Disk071	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
			Disk72	D:\MP\Disk072	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty
	Disk73		D:\MP\Disk073	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
	Disk74		D:\MP\Disk074	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
	Disk75		D:\MP\Disk075	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
	Disk76		D:\MP\Disk076	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
	Disk77		D:\MP\Disk077	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
	Disk78		D:\MP\Disk078	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
	Disk79		D:\MP\Disk079	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
	Disk80		D:\MP\Disk080	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
	Disk81		D:\MP\Disk081	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
	Disk82		D:\MP\Disk082	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty		
	Disk83		D:\MP\Disk083	Mirror 1 Drive H: Log File for Node 2							
Node 3	Enclosure 7	Disk84	D:\MP\Disk084	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	13x2GB (Drive M:) Backup Storage for Node 2	empty	
		Disk85	D:\MP\Disk085	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk86	D:\MP\Disk086	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk87	D:\MP\Disk087	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk88	D:\MP\Disk088	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk89	D:\MP\Disk089	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk90	D:\MP\Disk090	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk91	D:\MP\Disk091	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk92	D:\MP\Disk092	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk93	D:\MP\Disk093	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk94	D:\MP\Disk094	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk95	D:\MP\Disk095	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	
		Disk96	D:\MP\Disk096	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5		empty	

Enclosure 8	Disk97	D:\MP\Disk097	Mirror 0 Drive I: Log File for Node 3					
	Disk98	D:\MP\Disk098	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk99	D:\MP\Disk099	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk100	D:\MP\Disk100	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk101	D:\MP\Disk101	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk102	D:\MP\Disk102	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk103	D:\MP\Disk103	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk104	D:\MP\Disk104	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk105	D:\MP\Disk105	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk106	D:\MP\Disk106	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk107	D:\MP\Disk107	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk108	D:\MP\Disk108	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk109	D:\MP\Disk109	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk110	D:\MP\Disk110	.\Partition1	.\Partition2	.\Partition3	.\Partition4	.\Partition5	empty
	Disk111	Mirror 1 Drive I: Log File for Node 3						

5.3 Database Partition / Replication Mapping

The mapping of database partitions/replications must be explicitly described.

The database was not replicated. The database was logically partitioned into 4 logic nodes.

5.4 RAID Implementation

Implementations may use some form of RAID to ensure high availability. If used for data, auxiliary storage (e.g., indexes) or temporary space, the level of RAID must be disclosed for each device.

There was no RAID device applied in the system. For database logging, Windows mirrored volumes were configured to meet the requirement for redundancy.

5.5 DBGEN Modifications

Any modifications to the DBGEN (see Clause 4.2.1) source code must be disclosed. In the event that a program other than DBGEN was used to populate the database, it must be disclosed in its entirety.

The standard distribution DBGEN version 1.3.0 was used for database population. No modifications were made.

5.6 Database Load Time

The database load time for the test database (see Clause 4.3) must be disclosed.

See the Executive Summary at the beginning of this report.

5.7 Data Storage Ratio

The data storage ratio must be disclosed. It is computed as the ratio between the total amount of priced disk space and the chosen test database size as defined in Clause 4.1.3.

The calculation of the data storage ratio is shown in the following table.

Disk Type	Number of Disks	Formatted Space per Disk	Total Disk Space	Scale Factor	Storage Ratio
18.3GB 15K FC Drive	112	17.09GB	1914.08GB		
36.4GB 15K Ultra160 SCSI Drive	2	34.2GB	68.40GB		
Total			1982.48GB	100	19.82

The data storage ratio is 19.82, derived by dividing 1982.48GB by the database size of 100GB.

5.8 Database Load Mechanism Details and Illustration

The details of the database load must be disclosed, including a block diagram illustrating the overall process. Disclosure of the load procedure includes all steps, scripts, input and configuration files required to completely reproduce the test and qualification databases.

Flat files for each of the tables were created using DBGEN.

The NATION and REGION tables were created on node 0 and then loaded from dbgen output. The other tables were loaded on the four logical nodes.

The tables were loaded as depicted in Figure 4-1.

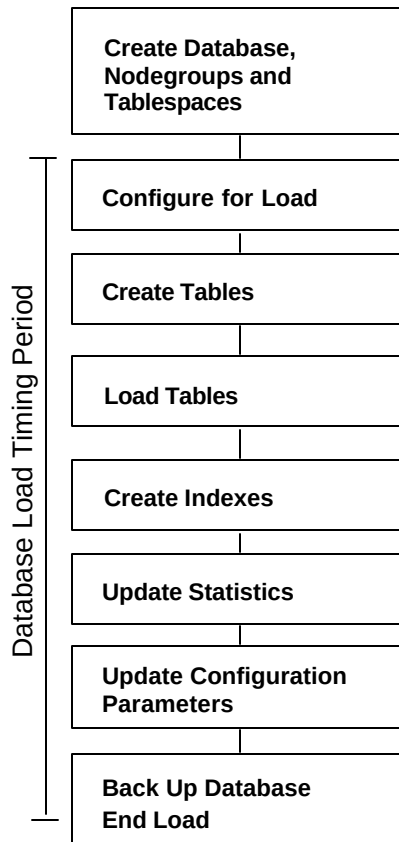


Figure 4-1. Database Load Procedure

5.9 Qualification Database Configuration

Any differences between the configuration of the qualification database and the test database must be disclosed.

The qualification database used identical scripts and disk structure to create and load the data with adjustments for size difference, and fewer drives were used. Adjustments were also made so that the test database and the qualification database could exist concurrently. The command “SET DB2INSTANCE=QUAL” was used to change from the test database to the qualification database. This setting persisted for the DB2 command session. See Section 5.2 for details.

6 Clause 5: Performance Metrics and Execution Rules Related Items

6.1 System Activity between Load and Performance Tests

Any system activity on the SUT that takes place between the conclusion of the load test and the beginning of the performance test must be fully disclosed.

The auditor requested that queries be run against the database to verify the correctness of the database load.

6.2 Steps in the Power Test

The details of the steps followed to implement the power test (e.g., system reboot, database restart) must be disclosed.

The following steps were used to implement the power test:

1. RF1 Refresh Transaction
2. Stream 00 Execution
3. RF2 Refresh Transaction

6.3 Timing Intervals for Each Query and Refresh Function

The timing intervals for each query of the measured set and for both update functions must be reported for the power test.

See the Numerical Quantities Summary in the Executive Summary at the beginning of this report.

6.4 Number of Streams for the Throughput Test

The number of execution streams used for the throughput test must be disclosed.

Five streams were used for the throughput test.

6.5 Start and End Date/Times for Each Query Stream

The start time and finish time for each query execution stream must be reported for the throughput test.

See the Numerical Quantities Summary in the Executive Summary at the beginning of this report.

6.6 Total Elapsed Time for the Measurement Interval

The total elapsed time for the measurement interval must be reported for the throughput test.

See the Numerical Quantities Summary in the Executive Summary at the beginning of this report.

6.7 Refresh Function Start Date/Time and Finish Date/Time

The start time and finish time for each update function in the update stream must be reported for the throughput test.

See the Numerical Quantities Summary in the Executive Summary at the beginning of this report.

6.8 Timing Intervals for Each Query and Each Refresh Function for Each Stream

The timing intervals for each query of each stream and for each update function must be reported for the throughput test.

See the Numerical Quantities Summary in the Executive Summary at the beginning of this report.

6.9 Performance Metrics

The computed performance metrics, related numerical quantities, and the price/performance metric must be reported.

See the Numerical Quantities Summary in the Executive Summary at the beginning of this report.

6.10 Performance Metric and Numerical Quantities from Both Runs

The performance metric and numerical quantities from both runs must be disclosed.

Two consecutive runs of the TPC-H benchmark were performed. The following table contains the results for both runs.

	QppH @ 100GB	QthH @ 100GB	QphH @ 100GB
Run1	6,168.0	3,052.0	4,338.7
Run2	6,122.1	3,030.8	4,307.5

6.11 System Activity between Tests

Any activity on the SUT that takes place between the conclusion of Run1 and the beginning of Run2 must be disclosed.

DB2 was restarted between runs.

7 Clause 6: SUT and Driver Implementation Related Items

7.1 Driver

A detailed textual description of how the driver performs its functions, how its various components interact and any product functionality or environmental setting on which it relies must be provided. All related source code, scripts and configurations must be disclosed. The information provided should be sufficient for an independent reconstruction of the driver.

Appendix D, “Driver Source Code,” contains the source code used for the driver and all scripts used in connection with it.

The Power test is invoked by calling tpacdbatch with the stream number 0 specified, an indication that the refresh functions must be run, and the SQL file that contains the power stream queries.

The Throughput test is invoked by initiating a call to tpacdbatch for every query stream that will be run. Tpacdbatch gets the stream number for each of the streams, and the SQL file specific to that stream number as the queries to execute. The refresh function is initiated as a separate call to tpacdbatch with the SQL script for the refresh functions and the total number of query streams specified.

7.2 Implementation-Specific Layer

If an implementation-specific layer is used, then a detailed description of how it performs its functions must be supplied, including any related source code or scripts. This description should allow an independent reconstruction of the implementation-specific layer.

The implementation specific layer is a single executable SQL application that uses embedded dynamic SQL to process the EQT generated by QGEN. The application is called tpacdbatch to indicate that it processes a batch of TPC-H queries, although it is completely capable of processing any arbitrary SQL statement (both DML and DDL).

A separate instance of tpacdbatch is invoked for each stream. Each instance establishes a distinct connection to the database server through which the EQT is transmitted to the database and the results are returned through the implementation specific layer to the driver. When an instance of tpacdbatch is invoked, it is provided with a context of whether it is running a power test, query stream or refresh stream, as well as an input file containing the 22 queries and/or refresh functions. tpacdbatch then connects to the database, performs any session initialization as well as preparing output files required by the auditor. Then it proceeds to read from the input file and processes each query or refresh function in turn.

For queries, each query is prepared, described, and a cursor is opened and used to fetch the required number of rows. After the last row has been retrieved a commit is issued. For the refresh functions, during the database build all data is first split for each node using the db2split utility. For RF1, the data for each node is further split into n equal portions for both the lineitem and orders tables taking care that the records for the same orderkey remain in the same set. For RF2, the data for each node is further split into m equal portions. During the run, when tpacdbatch encounters a call to execute RF1, it first calls a shell script which loads these n sets of data into n sets of temporary tables (one each for lineitem and orders). Then tpacdbatch forks off n children to do an insert with subselect into the original lineitem and orders tables. When tpacdbatch encounters a call to execute RF2, it calls a shell script that loads these data into a single staging table. Then tpacdbatch forks off p children (where $p * x = m$) to do x sets of deletes from the orders and lineitem tables with a subselect from the staging table.

7.3 Profile-Directed Optimization

Profile-directed optimization was not used.

8 Clause 7: Pricing Related Items

8.1 Hardware and Software Components

A detailed list of the hardware and software used in the priced system must be reported. Each item must have a vendor part number, description and release/revision level, and either general availability status or committed delivery date. If package-pricing is used, contents of the package must be disclosed. Pricing source(s) and effective date(s) must also be reported.

A detailed list of all hardware and software, including the 3-year price, is provided in the Executive Summary at the front of this report. The price quotations are included in Appendix F.

8.2 Three-Year Cost of System Configuration

The total 3-year price of the entire configuration must be reported, including hardware, software and maintenance charges. Separate component pricing is recommended. The basis of all discounts must be disclosed.

A detailed list of all hardware and software, including the 3-year price, is provided in the Executive Summary at the front of this report. The price quotations are included in Appendix F.

8.3 Availability Dates

The committed delivery date for general availability (availability date) of products used in the price calculations must be reported. When the priced system includes products with different availability dates, availability date reported on the Executive Summary must be the date by which all components are committed to being available. The Full Disclosure Report must report availability dates individually for at least each of the categories for which a pricing subtotal must be provided (see Clause 7.3.1.3).

The system as priced will be generally available November 8, 2003.

8.4 Country-Specific Pricing

Additional Clause 7 related items may be included in the Full Disclosure Report for each country-specific priced configuration. Country-specific pricing is subject to Clause 7.1.7.

The configuration is priced for Germany.

Clause 9: Audit Related Items

9.1 Auditor's Report

The auditor's agency name, address, phone number, and Attestation letter with a brief audit summary report indicating compliance must be included in the Full Disclosure Report. A statement should be included specifying who to contact in order to obtain further information regarding the audit process.

This implementation of the TPC Benchmark H was audited by Francois Raab of InfoSizing, Inc. Further information can be downloaded from www.tpc.org.

Benchmark Sponsor: Roman Klamke
MAXDATA Computer
GmbH & Co. KG
Elbestraße 12 - 16
D-45768 Marl - Germany

July 2, 2003

I verified the TPC Benchmark™ H performance of the following configuration:

Platform: **MAXDATA PLATINUM 9000-4R**
Database Manager: **IBM DB2 UDB 8.1**
Operating System: **Microsoft Windows Server 2003 Enterprise Edition**

The results were:

CPU (Speed)	Memory	Disks	QphH@100GB
MAXDATA PLATINUM 9000-4R			
4 x Intel Itanium 2 (1.5 GHz)	6MB Cache/cpu 32 GB Main	112 x 18 GB 2 x 36 GB	4,307.5

In my opinion, this performance result was produced in compliance with the TPC's requirements for the benchmark. The following verification items were given special attention:

- The database records were defined with the proper layout and size
- The database population was generated using DBGEN
- The database was properly scaled to 100GB and populated accordingly
- The compliance of the database auxiliary data structures was verified
- The database load time was correctly measured and reported
- The required ACID properties were verified and met

- The query input variables were generated by QGEN
- The query text was produced using minor modifications and an approved query variant
- The execution of the queries against the SF1 database produced compliant answers
- A compliant implementation specific layer was used to drive the tests
- The throughput tests involved 5 query streams
- The ratio between the longest and the shortest query was such that no query timing was adjusted
- The execution times for queries and refresh functions were correctly measured and reported
- The repeatability of the measured results was verified
- The required amount of database log was configured
- The system pricing was verified for major components and maintenance
- The major pages from the FDR were verified for accuracy

Additional Audit Notes:

None.

Respectfully Yours,



François Raab
President

1373 North Franklin Street • Colorado Springs, CO 80903-2527 • Office: 719/473-7555 • Fax: 719/473-7554

Appendix A: Tunable Parameters and System Configuration

DB2 UDB 8.1 Database and Database Manager Configuration

Database Configuration for Node 0

Database Configuration for Database TPCD

Database configuration release level	= 0x0a00
Database release level	= 0x0a00
Database territory	= US
Database code page	= 1252
Database code set	= IBM-1252
Database country/region code	= 1
Dynamic SQL Query management (DYN_QUERY_MGMT) = DISABLE	
Discovery support for this database (DISCOVER_DB) = ENABLE	
Default query optimization class (DFT_QUERYOPT) = 7	
Degree of parallelism (DFT_DEGREE) = 1	
Continue upon arithmetic exceptions (DFT_SQLMATHWARN) = NO	
Default refresh age (DFT_REFRESH_AGE) = 0	
Number of frequent values retained (NUM_FREQVALUES) = 0	
Number of quantiles retained (NUM_QUANTILES) = 600	
Backup pending	= NO
Database is consistent	= YES
Rollforward pending	= NO
Restore pending	= NO
Multi-page file allocation enabled	= NO

Log retain for recovery status RECOVERY	=
User exit for logging status	= NO
Data Links Token Expiry Interval (sec) (DL_EXPINT) = 60	
Data Links Write Token Init Expiry Intvl(DL_WT_IEXPINT) = 60	
Data Links Number of Copies (DL_NUM_COPIES) = 1	
Data Links Time after Drop (days) (DL_TIME_DROP) = 1	
Data Links Token in Uppercase (DL_UPPER) = NO	
Data Links Token Algorithm (DL_TOKEN) = MAC0	
Database heap (4KB) (DBHEAP) = 20000	
Size of database shared memory (4KB) (DATABASE_MEMORY) = AUTOMATIC	
Catalog cache size (4KB) (CATALOGCACHE_SZ) = 386	
Log buffer size (4KB) (LOGBUFSZ) = 1048	
Utilities heap size (4KB) (UTIL_HEAP_SZ) = 40000	
Buffer pool size (pages) (BUFFPAGE) = 375000	
Extended storage segm ents size (4KB) (ESTORE_SEG_SZ) = 16000	
Number of extended storage segments (NUM_ESTORE_SEGS) = 0	
Max storage for lock list (4KB) (LOCKLIST) = 16384	
Max size of appl. group mem set (4KB) (APPGROUP_MEM_SZ) = 40000	
Percent of mem for appl. group heap (GROUPHEAP_RATIO) = 70	
Max appl. control heap size (4KB) (APP_CTL_HEAP_SZ) = 2048	
Sort heap thres for shared sorts (4KB) (SHEAPTHRES_SHR) = (SHEAPTHRES)	
Sort list heap (4KB) (SORTHEAP) = 75000	
SQL statement heap (4KB) (STMTHEAP) = 10000	

Default application heap (4KB) (APPLHEAPSZ) = 16000
 Package cache size (4KB) (PCKCACHESZ) = 640
 Statistics heap size (4KB) (STAT_HEAP_SZ) = 10000

 Interval for checking deadlock (ms) (DLCHKTIME) = 5000
 Percent. of lock lists per application (MAXLOCKS) = 5
 Lock timeout (sec) (LOCKTIMEOUT) = -1

 Changed pages threshold (CHNGPGS_THRESH) = 80
 Number of asynchronous page cleaners (NUM_IOCLEANERS) = 14
 Number of I/O servers (NUM_IOSERVERS) = 14
 Index sort flag (INDEXSORT) = YES
 Sequential detect flag (SEQDETECT) = YES
 Default prefetch size (pages) (DFT_PREFETCH_SZ) = 16

 Track modified pages (TRACKMOD) = OFF

 Default number of containers = 1
 Default tablespace extentsize (pages) (DFT_EXTENT_SZ) = 32

 Max number of active applications (MAXAPPLS) = 150
 Average number of active applications (AVG_APPLS) = 1
 Max DB files open per application (MAXFILOP) = 1024

 Log file size (4KB) (LOGFILSIZ) = 8192
 Number of primary log files (LOGPRIMARY) = 20
 Number of secondary log files (LOGSECOND) = 5
 Changed path to log files (NEWLOGPATH) =
 Path to log files =
 F:\db2tpch\logs\NODE0000\
 Overflow log path (OVERFLOWLOGPATH) =
 Mirror log path (MIRRORLOGPATH) =
 First active log file = S0000002.LOG
 Block log on disk full (BLK_LOG_DSK_FUL) = NO
 Percent of max active log space by transaction (MAX_LOG) = 0
 Num. of active log files for 1 active UOW (NUM_LOG_SPAN) = 0

 Group commit count (MINCOMMIT) = 1
 Percent log file reclaimed before soft ckpt (SOFTMAX) = 1800
 Log retain for recovery enabled (LOGRETAIN) = RECOVERY
 User exit for logging enabled (USEREXIT) = OFF

 Auto restart enabled (AUTORESTART) = ON
 Index re-creation time (INDEXREC) = SYSTEM (ACCESS)
 Default number of loadrec sessions (DFT_LOADREC_SES) = 1
 Number of database backups to retain (NUM_DB_BACKUPS) = 12

Recovery history retention (days) (REC_HIS_RETENTN) = 366

 TSM management class (TSM_MGMTCLASS) =
 TSM node name (TSM_NODENAME) =
 TSM owner (TSM_OWNER) =
 TSM password (TSM_PASSWORD) =

Database Configuration for Node 1

get db cfg for TPCD

Database Configuration for Database TPCD

Database configuration release level = 0x0a00
 Database release level = 0x0a00

Database territory = US
 Database code page = 1252
 Database code set = IBM-1252
 Database country/region code = 1

Dynamic SQL Query management
 (DYN_QUERY_MGMT) = DISABLE

Discovery support for this database (DISCOVER_DB) = ENABLE

Default query optimization class (DFT_QUERYOPT) = 7

Degree of parallelism (DFT_DEGREE) = 1
 Continue upon arithmetic exceptions
 (DFT_SQLMATHWARN) = NO
 Default refresh age (DFT_REFRESH_AGE) = 0
 Number of frequent values retained
 (NUM_FREQVALUES) = 0
 Number of quantiles retained (NUM_QUANTILES) = 600

Backup pending = NO

Database is consistent = YES
 Rollforward pending = NO
 Restore pending = NO

Multi-page file allocation enabled = NO

Log retain for recovery status =
 RECOVERY
 User exit for logging status = NO

Data Links Token Expiry Interval (sec) (DL_EXPINT) = 60

Data Links Write Token Init Expiry
 Intvl (DL_WT_IEXPINT) = 60
 Data Links Number of Copies (DL_NUM_COPIES) = 1

Data Links Time after Drop (days) (DL_TIME_DROP) = 1

Data Links Token in Uppercase (DL_UPPER) = NO

Data Links Token Algorithm (DL_TOKEN) = MAC0

Database heap (4KB) (DBHEAP) = 20000
 Size of database shared memory (4KB)
 (DATABASE_MEMORY) = AUTOMATIC
 Catalog cache size (4KB) (CATALOGCACHE_SZ)
 = 386
 Log buffer size (4KB) (LOGBUFSZ) = 1048
 Utilities heap size (4KB) (UTIL_HEAP_SZ) =
 40000
 Buffer pool size (pages) (BUFFPAGE) =
 375000
 Extended storage segments size (4KB)
 (ESTORE_SEG_SZ) = 16000
 Number of extended storage segments
 (NUM_ESTORE_SEGS) = 0
 Max storage for lock list (4KB) (LOCKLIST) =
 16384

 Max size of appl. group mem set (4KB)
 (APPGROUP_MEM_SZ) = 40000
 Percent of mem for appl. group heap
 (GROUPHEAP_RATIO) = 70
 Max appl. control heap size (4KB)
 (APP_CTL_HEAP_SZ) = 2048

 Sort heap thres for shared sorts (4KB)
 (SHEAPTHRES_SHR) = (SHEAPTHRES)
 Sort list heap (4KB) (SORTHEAP) = 75000
 SQL statement heap (4KB) (STMTHEAP) =
 10000
 Default application heap (4KB) (APPLHEAPSZ) =
 16000
 Package cache size (4KB) (PCKCACHESZ) =
 640
 Statistics heap size (4KB) (STAT_HEAP_SZ) =
 10000

 Interval for checking deadlock (ms) (DLCHKTIME) =
 5000
 Percent. of lock lists per application (MAXLOCKS) = 5
 Lock timeout (sec) (LOCKTIMEOUT) = -1

 Changed pages threshold (CHNGPGS_THRESH)
 = 80
 Number of asynchronous page cleaners
 (NUM_IOCLEANERS) = 14
 Number of I/O servers (NUM_IOSERVERS) =
 14
 Index sort flag (INDEXSORT) = YES
 Sequential detect flag (SEQDETECT) = YES
 Default prefetch size (pages) (DFT_PREFETCH_SZ)
 = 16

 Track modified pages (TRACKMOD) =
 OFF

 Default number of containers = 1
 Default tablespace extentsize (pages) (DFT_EXTENT_SZ)
 = 32

 Max number of active applications (MAXAPPLS) =
 150
 Average number of active applications (AVG_APPLS)
 = 1
 Max DB files open per application (MAXFILOP) =
 1024

 Log file size (4KB) (LOGFILSIZ) = 8192
 Number of primary log files (LOGPRIMARY) =
 20
 Number of secondary log files (LOGSECOND) = 5

Changed path to log files (NEWLOGPATH) =
 Path to log files =
 g:\db2tpch\logs\NODE0001\
 Overflow log path (OVERFLOWLOGPATH)
 =
 Mirror log path (MIRRORLOGPATH) =
 First active log file = S0000000.LOG
 Block log on disk full (BLK_LOG_DSK_FUL) =
 NO
 Percent of max active log space by transaction (MAX_LOG)
 = 0
 Num. of active log files for 1 active
 UOW(NUM_LOG_SPAN) = 0

 Group commit count (MINCOMMIT) = 1
 Percent log file reclaimed before soft ckcpt (SOFTMAX)
 = 1800
 Log retain for recovery enabled (LOGRETAIN) =
 RECOVERY
 User exit for logging enabled (USEREXIT) = OFF

 Auto restart enabled (AUTORESTART) = ON
 Index re-creation time (INDEXREC) =
 SYSTEM (ACCESS)
 Default number of loadrec sessions
 (DFT_LOADREC_SES) = 1
 Number of database backups to retain
 (NUM_DB_BACKUPS) = 12
 Recovery history retention (days)
 (REC_HIS_RETENTN) = 366

 TSM management class (TSM_MGMTCLASS)
 =
 TSM node name (TSM_NODENAME) =
 TSM owner (TSM_OWNER) =
 TSM password (TSM_PASSWORD) =

Database Configuration for Node 2

get db cfg for TPCD

Database Configuration for Database TPCD

Database configuration release level = 0x0a00
 Database release level = 0x0a00

 Database territory = US
 Database code page = 1252
 Database code set = IBM-1252
 Database country/region code = 1

Dynamic SQL Query management
 (DYN_QUERY_MGMT) = DISABLE

Discovery support for this database (DISCOVER_DB)
 = ENABLE

Default query optimization class (DFT_QUERYOPT)
 = 7
 Degree of parallelism (DFT_DEGREE) = 1
 Continue upon arithmetic exceptions
 (DFT_SQLMATHWARN) = NO
 Default refresh age (DFT_REFRESH_AGE) = 0
 Number of frequent values retained
 (NUM_FREQVALUES) = 0
 Number of quantiles retained (NUM_QUANTILES)
 = 600

Backup pending = NO
 Database is consistent = YES
 Rollforward pending = NO
 Restore pending = NO
 Multi-page file allocation enabled = NO
 Log retain for recovery status =
 RECOVERY
 User exit for logging status = NO
 Data Links Token Expiry Interval (sec) (DL_EXPINT) = 60
 Data Links Write Token Init Expiry Intvl(DL_WT_IEXPINT) = 60
 Data Links Number of Copies (DL_NUM_COPIES) = 1
 Data Links Time after Drop (days) (DL_TIME_DROP) = 1
 Data Links Token in Uppercase (DL_UPPER) = NO
 Data Links Token Algorithm (DL_TOKEN) = MAC0
 Database heap (4KB) (DBHEAP) = 20000
 Size of database shared memory (4KB) (DATABASE_MEMORY) = AUTOMATIC
 Catalog cache size (4KB) (CATALOGCACHE_SZ) = 386
 Log buffer size (4KB) (LOGBUFSZ) = 1048
 Utilities heap size (4KB) (UTIL_HEAP_SZ) = 40000
 Buffer pool size (pages) (BUFFPAGE) = 375000
 Extended storage segments size (4KB) (ESTORE_SEG_SZ) = 16000
 Number of extended storage segments (NUM_ESTORE_SEGS) = 0
 Max storage for lock list (4KB) (LOCKLIST) = 16384
 Max size of appl. group mem set (4KB) (APPGROUP_MEM_SZ) = 40000
 Percent of mem for appl. group heap (GROUPHEAP_RATIO) = 70
 Max appl. control heap size (4KB) (APP_CTL_HEAP_SZ) = 2048
 Sort heap thres for shared sorts (4KB) (SHEAPTHRES_SHR) = (SHEAPTHRES)
 Sort list heap (4KB) (SORTHEAP) = 75000
 SQL statement heap (4KB) (STMTHEAP) = 10000
 Default application heap (4KB) (APPLHEAPSZ) = 16000
 Package cache size (4KB) (PCKCACHESZ) = 640
 Statistics heap size (4KB) (STAT_HEAP_SZ) = 10000
 Interval for checking deadlock (ms) (DLCHKTIME) = 5000
 Percent. of lock lists per application (MAXLOCKS) = 5
 Lock timeout (sec) (LOCKTIMEOUT) = -1
 Changed pages threshold (CHNGPGS_THRESH) = 80

Number of asynchronous page cleaners (NUM_IOCLEANERS) = 14
 Number of I/O servers (NUM_IOSERVERS) = 14
 Index sort flag (INDEXSORT) = YES
 Sequential detect flag (SEQDETECT) = YES
 Default prefetch size (pages) (DFT_PREFETCH_SZ) = 16
 Track modified pages (TRACKMOD) = OFF
 Default number of containers = 1
 Default tablespace extentsize (pages) (DFT_EXTENT_SZ) = 32
 Max number of active applications (MAXAPPLS) = 150
 Average number of active applications (AVG_APPLS) = 1
 Max DB files open per application (MAXFILOP) = 1024
 Log file size (4KB) (LOGFILSIZ) = 8192
 Number of primary log files (LOGPRIMARY) = 20
 Number of secondary log files (LOGSECOND) = 5
 Changed path to log files (NEWLOGPATH) =
 Path to log files =
 h:\db2tpch\logs\NODE0002\
 Overflow log path (OVERFLOWLOGPATH) =
 Mirror log path (MIRRORLOGPATH) =
 First active log file = S00000000.LOG
 Block log on disk full (BLK_LOG_DSK_FUL) = NO
 Percent of max active log space by transaction (MAX_LOG) = 0
 Num. of active log files for 1 active UOW(NUM_LOG_SPAN) = 0
 Group commit count (MINCOMMIT) = 1
 Percent log file reclaimed before soft chkpt (SOFTMAX) = 1800
 Log retain for recovery enabled (LOGRETAIN) = RECOVERY
 User exit for logging enabled (USEREXIT) = OFF
 Auto restart enabled (AUTORESTART) = ON
 Index re-creation time (INDEXREC) =
 SYSTEM (ACCESS)
 Default number of loadrec sessions (DFT_LOADREC_SES) = 1
 Number of database backups to retain (NUM_DB_BACKUPS) = 12
 Recovery history retention (days) (REC_HIS_RETENTN) = 366
 TSM management class (TSM_MGMTCLASS) =
 TSM node name (TSM_NODENAME) =
 TSM owner (TSM_OWNER) =
 TSM password (TSM_PASSWORD) =

Database Configuration for Node 3

get db cfg for TPCD

Database Configuration for Database TPCD		Max size of appl. group mem set (4KB) (APPGROUP_MEM_SZ) = 40000
Database configuration release level	= 0x0a00	Percent of mem for appl. group heap (GROUPHEAP_RATIO) = 70
Database release level	= 0x0a00	Max appl. control heap size (4KB) (APP_CTL_HEAP_SZ) = 2048
Database territory	= US	Sort heap thres for shared sorts (4KB) (SHEAPTHRES_SHR) = (SHEAPTHRES)
Database code page	= 1252	Sort list heap (4KB) (SORTHEAP) = 75000
Database code set	= IBM-1252	SQL statement heap (4KB) (STMTHEAP) = 10000
Database country/region code	= 1	Default application heap (4KB) (APPLHEAPSZ) = 16000
Dynamic SQL Query management (DYN_QUERY_MGMT) = DISABLE		Package cache size (4KB) (PCKCACHESZ) = 640
Discovery support for this database (DISCOVER_DB) = ENABLE		Statistics heap size (4KB) (STAT_HEAP_SZ) = 10000
Default query optimization class (DFT_QUERYOPT) = 7		Interval for checking deadlock (ms) (DLCHKTIME) = 5000
Degree of parallelism (DFT_DEGREE) = 1		Percent. of lock lists per application (MAXLOCKS) = 5
Continue upon arithmetic exceptions (DFT_SQLMATHWARN) = NO		Lock timeout (sec) (LOCKTIMEOUT) = -1
Default refresh age (DFT_REFRESH_AGE) = 0		Changed pages threshold (CHNGPGS_THRESH) = 80
Number of frequent values retained (NUM_FREQVALUES) = 0		Number of asynchronous page cleaners (NUM_IOCLEANERS) = 14
Number of quantiles retained (NUM_QUANTILES) = 600		Number of I/O servers (NUM_IOSERVERS) = 14
Backup pending = NO		Index sort flag (INDEXSORT) = YES
Database is consistent = YES		Sequential detect flag (SEQDETECT) = YES
Rollforward pending = NO		Default prefetch size (pages) (DFT_PREFETCH_SZ) = 16
Restore pending = NO		Track modified pages (TRACKMOD) = OFF
Multi-page file allocation enabled = NO		Default number of containers = 1
Log retain for recovery status RECOVERY	=	Default tablespace extentsize (pages) (DFT_EXTENT_SZ) = 32
User exit for logging status = NO		Max number of active applications (MAXAPPLS) = 150
Data Links Token Expiry Interval (sec) (DL_EXPINT) = 60		Average number of active applications (AVG_APPLS) = 1
Data Links Write Token Init Expiry Intvl(DL_WT_IEXPINT) = 60		Max DB files open per application (MAXFILOP) = 1024
Data Links Number of Copies (DL_NUM_COPIES) = 1		Log file size (4KB) (LOGFILSIZ) = 8192
Data Links Time after Drop (days) (DL_TIME_DROP) = 1		Number of primary log files (LOGPRIMARY) = 20
Data Links Token in Uppercase (DL_UPPER) = NO		Number of secondary log files (LOGSECOND) = 5
Data Links Token Algorithm (DL_TOKEN) = MAC0		Changed path to log files (NEWLOGPATH) =
Database heap (4KB) (DBHEAP) = 20000		Path to log files i:\db2tpch\logs\NODE0003\
Size of database shared memory (4KB) (DATABASE_MEMORY) = AUTOMATIC		Overflow log path (OVERFLOWLOGPATH) =
Catalog cache size (4KB) (CATALOGCACHE_SZ) = 386		Mirror log path (MIRRORLOGPATH) =
Log buffer size (4KB) (LOGBUFSZ) = 1048		First active log file = S0000000.LOG
Utilities heap size (4KB) (UTIL_HEAP_SZ) = 40000		Block log on disk full (BLK_LOG_DSK_FUL) = NO
Buffer pool size (pages) (BUFFPAGE) = 375000		Percent of max active log space by transaction(MAX_LOG) = 0
Extended storage segments size (4KB) (ESTORE_SEG_SZ) = 16000		Num. of active log files for 1 active UOW(NUM_LOG_SPAN) = 0
Number of extended storage segments (NUM_ESTORE_SEGS) = 0		Group commit count (MINCOMMIT) = 1
Max storage for lock list (4KB) (LOCKLIST) = 16384		Percent log file reclaimed before soft ckpt (SOFTMAX) = 1800

Log retain for recovery enabled (LOGRETAIN) = RECOVERY
 User exit for logging enabled (USEREXIT) = OFF
 Auto restart enabled (AUTORESTART) = ON
 Index re-creation time (INDEXREC) = SYSTEM (ACCESS)
 Default number of loadrec sessions (DFT_LOADREC_SES) = 1
 Number of database backups to retain (NUM_DB_BACKUPS) = 12
 Recovery history retention (days) (REC_HIS_RETENTN) = 366
 TSM management class (TSM_MGMTCLASS) =
 TSM node name (TSM_NODENAME) =
 TSM owner (TSM_OWNER) =
 TSM password (TSM_PASSWORD) =

DB2 Database Manager Configuration

Node type = Enterprise Server Edition with local and remote clients

Database manager configuration release level = 0x0a00

Maximum total of files open (MAXTOTFILOP) = 16000

CPU speed (millisec/instruction) (CPUSPEED) = 2.361721e-007

Communications bandwidth (MB/sec) (COMM_BANDWIDTH) = 1.000000e+002

Max number of concurrently active databases (NUMDB) = 1

Data Linkssupport (DATA LINKS) = NO

Federated Database System Support (FEDERATED) = NO

Transaction processor monitor name (TP_MON_NAME) =

Default charge-back account (DFT_ACCOUNT_STR) =

Java Development Kit installation path (JDK_PATH) =

Diagnostic error capture level (DIAGLEVEL) = 3

Notify Level (NOTIFYLEVEL) = 3

Diagnostic data directory path (DIAGPATH) =

Default database monitor switches

Buffer pool (DFT_MON_BUFPOOL) = OFF

Lock (DFT_MON_LOCK) = OFF

Sort (DFT_MON_SORT) = OFF

Statement (DFT_MON_STMT) = OFF

Table (DFT_MON_TABLE) = OFF

Timestamp (DFT_MON_TIMESTAMP) = OFF

Unit of work (DFT_MON_UOW) = OFF

Monitor health of instance and databases (HEALTH_MON) = OFF

SYSADM group name (SYSADM_GROUP) =

SYSCTRL group name (SYSCTRL_GROUP) =

SYSMAINT group name (SYSMAINT_GROUP) =

Database manager authentication (AUTHENTICATION) = SERVER

Cataloging allowed without authority (CATALOG_NOAUTH) = NO

Trust all clients (TRUST_ALLCLNTS) = YES

Trusted client authentication (TRUST_CLNTAUTH) = CLIENT

Bypass federated authentication (FED_NOAUTH) = NO

Default database path (DFTDBPATH) = D:

Database monitor heap size (4KB) (MON_HEAP_SZ) = 46

Java Virtual Machine heap size (4KB) (JAVA_HEAP_SZ) = 1024

Audit buffer size (4KB) (AUDIT_BUF_SZ) = 0

Size of instance shared memory (4KB)
(INSTANCE_MEMORY) = AUTOMATIC

Backup buffer default size (4KB) (BACKBUFSZ) = 1024

Restore buffer default size (4KB) (RESTBUFSZ) = 1024

Agent stack size (AGENT_STACK_SZ) = 16

Minimum committed private memory (4KB)
(MIN_PRIV_MEM) = 32

Private memory threshold (4KB)
(PRIV_MEM_THRESH) = 20000

Sort heap threshold (4KB) (SHEAPTHRES) = 400000

Directory cache support (DIR_CACHE) = YES

Application support layer heap size (4KB) (ASLHEAPSZ) = 15

Max requester I/O block size (bytes) (RQRIOBLK) = 32767

DOS requester I/O block size (bytes) (DOS_RQRIOBLK) = 4096

Query heap size (4KB) (QUERY_HEAP_SZ) = 1000

DRDA services heap size (4KB) (DRDA_HEAP_SZ) = 128

Workload impact by throttled utilities(UTIL_IMPACT_LIM) = 100

Priority of agents (AGENTPRI) = SYSTEM

Max number of exist ing agents (MAXAGENTS) = 3600

Agent pool size (NUM_POOLAGENTS) = 64

Initial number of agents in pool (NUM_INITAGENTS) = 4

Max number of coordinating agents
(MAX_COORDAGENTS) = (MAXAGENTS - NUM_INITAGENTS)

Max no. of concurrent coordinating agents
(MAXCAGENTS) = MAX_COORDAGENTS

Max number of client connections
(MAX_CONNECTIONS) = MAX_COORDAGENTS

Keep fenced process (KEEPFENCED) = YES

Number of pooled fenced processes (FENCED_POOL) = MAX_COORDAGENTS

Initialize fenced process with JVM (INITFENCED_JVM) = NO

Initial number of fenced processes (NUM_INITFENCED) = 0

Index re-creation time (INDEXREC) = ACCESS

Transaction manager database name
(TM_DATABASE) = 1ST_CONN

Transaction resync interval (sec) (RESYNC_INTERVAL) = 180

SPM name (SPM_NAME) =

SPM log size (SPM_LOG_FILE_SZ) = 256

SPM resync agent limit (SPM_MAX_RESYNC) = 20

SPM log path (SPM_LOG_PATH) =

NetBIOS Workstation name (NNAME) =

TCP/IP Service name (SVCENAME) =

Discovery mode (DISCOVER) = SEARCH

Discover server instance (DISCOVER_INST) = ENABLE

Maximum query degree of parallelism
(MAX_QUERYDEGREE) = ANY

Enable intra-partition parallelism (INTRA_PARALLEL) = NO

No. of int.communication buffers(4KB)(FCM_NUM_BUFFERS) = 30000

Node connection elapse time (sec) (CONN_ELAPSE)
= 10

Max number of node connection retries
(MAX_CONNRETRIES) = 5

Max time difference between nodes (min)
(MAX_TIME_DIFF) = 60

db2start/db2stop timeout (min) (START_STOP_TIME)
= 10

DB2 Registry Variables

DB2_EXTENDED_OPTIMIZATION=Y
DB2_ANTIJOIN=ON
DB2BPVARS=d:\home\db2tpch\tpch\ddl\win.mln\scattered_
read
DB2ACCOUNTNAME=KMCHAN-TIGER2\db2tpch
DB2INSTOWNER=KMCHAN-TIGER2
DB2PORTRANGE=60008:60011
DB2MEMMAXFREE=1000000000
DB2OPTIONS= -t -v +c
DB2NTNOCACHE=ON
DB2INSTPROF=d:\home\db2tpch
DB2_PARALLEL_IO=*

Microsoft Windows Server 2003

Enterprise Edition

Configuration Parameters

Boot Options

Timeout: 30
Default: \Device\HarddiskVolume3\WINDOWS
CurrentBootEntryID: 1

Boot Entries

Boot entry ID: 1

OS Friendly Name: Windows Server 2003, Enterprise
OsLoadOptions: N/A
BootFilePath:
\Device\HarddiskVolume1\EFI\Microsoft\WINNT50\ia64ldr.
efi
OsFilePath: \Device\HarddiskVolume3\WINDOWS

Boot entry ID: 2
OS Friendly Name: Floppy\Pci(1F1)/Ata(Primary,Slave)

Boot entry ID: 3
OS Friendly Name: CD/DVD
ROM\Pci(1F1)/Ata(Primary,Master)

Boot entry ID: 4

OS Friendly Name: Hard
Drive\Pci(620)/Scsi(Pun0,Lun0)/HD(Part1,Sig6F39EE40-A05

F-01C2-507B-9E5F8078F531)

Boot entry ID: 5
OS Friendly Name: Network
Boot\Pci(100)/Mac(0002B3000744)

Boot entry ID: 6
OS Friendly Name: EFI Shell [Built -in]

SUT Hardware Information Report

[System Summary]

Item	Value
OS Name	Microsoft(R) Windows(R) Server 2003, Enterprise Edition
Version	5.2.3790 Build 3790
OS Manufacturer	Microsoft Corporation
System Name	KMCHAN-TIGER2
System Manufacturer	Intel
System Model	MP Server
System Type	Itanium (TM)-based System
Processor	ia64 Family 31 Model 1 Stepping 5 GenuineIntel ~1494 Mhz
Processor	ia64 Family 31 Model 1 Stepping 5 GenuineIntel ~1494 Mhz
Processor	ia64 Family 31 Model 1 Stepping 5 GenuineIntel ~1494 Mhz
Processor	ia64 Family 31 Model 1 Stepping 5 GenuineIntel ~1494 Mhz
BIOS Version/Date	Intel Corporation S870BN4A.86P.M515.049.0303101756, 3/10/2003
SMBIOS Version	2.3
Windows Directory	C:\WINDOWS
System Directory	C:\WINDOWS\system32
Boot Device	\Device\HarddiskVolume1
Locale	United States
Hardware Abstraction Layer	Version = "5.2.3790.0 (srv03_rtm.030324-2048)"
User Name	Not Available
Time Zone	US Mountain Standard Time
Total Physical Memory	32.00 GB
Available Physical Memory	30.63 GB
Total Virtual Memory	75.26 GB
Available Virtual Memory	73.15 GB
Page File Space	43.26 GB
Page File	C:\pagefile.sys

[Hardware Resources]

[Conflicts/Sharing]

Resource	Device
I/O Port 0x0000A000-0x0000CFFF	PCI bus
I/O Port 0x0000A000-0x0000CFFF	Intel(r) 82870
Hub Interface to PCI Bridges	
I/O Port 0x00000000-0x00006FFF	PCI bus
I/O Port 0x00000000-0x00006FFF	Direct memory access controller
IRQ 5	Intel(r) 82870 Hot Plug controller
IRQ 5	Intel(r) 82870 Hot Plug controller
IRQ 5	Intel(r) 82870 Hot Plug controller
IRQ 5	Intel(r) 82870 Hot Plug controller

IRQ 5	Intel(r) 82870 Hot Plug controller		0x00000010-0x0000001F	Motherboard resources
IRQ 5	Intel(r) 82870 Hot Plug controller		OK	
Memory Address 0xE8000000-0xF9FFFFFF	PCI bus		0x00000022-0x0000002D	Motherboard resources
Memory Address 0xE8000000-0xF9FFFFFF	Intel(r) 82870 Hub Interface to PCI Bridges		OK	
Memory Address 0xFEC00000-0xFEC0FFFF	PCI bus		0x00000030-0x0000003F	Motherboard resources
Memory Address 0xFEC00000-0xFEC0FFFF	Motherboard resources		OK	
Memory Address 0xA0000-0xFFFF	PCI bus		0x00000044-0x0000005F	Motherboard resources
Memory Address 0xA0000-0xFFFF	RAGE XL PCI Family (Microsoft Corporation)		OK	
I/O Port 0x00007000-0x00009FFF	PCI bus		0x00000062-0x00000063	Motherboard resources
I/O Port 0x00007000-0x00009FFF	Intel(r) 82870 Hub Interface to PCI Bridges		OK	
Memory Address 0xFA000000-0xFBFFFFFF	PCI bus		0x00000065-0x0000006F	Motherboard resources
Memory Address 0xFA000000-0xFBFFFFFF	RAGE XL PCI Family (Microsoft Corporation)		OK	
I/O Port 0x0000D000-0x0000EFFF	PCI bus		0x00000072-0x0000007F	Motherboard resources
I/O Port 0x0000D000-0x0000EFFF	Intel(r) 82870 Hub Interface to PCI Bridges		OK	
[DMA]			0x00000080-0x00000080	Motherboard resources
Resource Device Status			OK	
Channel 4 Direct memory access controller	OK		0x00000084-0x00000086	Motherboard resources
Channel 2 Standard floppy disk controller	OK		OK	
[Forced Hardware]			0x00000088-0x00000088	Motherboard resources
Device PNP Device ID			OK	
[I/O]			0x0000008C-0x0000008E	Motherboard resources
Resource Device Status			OK	
0x00000000-0x00006FFF	PCI bus OK		0x00000090-0x0000009F	Motherboard resources
0x00000000-0x00006FFF	Direct memory access controller OK		OK	
0x00005FC0-0x00005FDF	Intel(r) 82801DB/DBM USB Universal Host Controller - 24C2	OK	0x000000A2-0x000000BD	Motherboard resources
0x00005FE0-0x00005FFF	Intel(r) 82801DB/DBM USB Universal Host Controller - 24C4	OK	OK	
0x00006FC0-0x00006FFF	Intel(R) PRO/1000 MT Network Connection	OK	0x000000E0-0x000000EF	Motherboard resources
0x00006E00-0x00006EFF	RAGE XL PCI Family (Microsoft Corporation)	OK	OK	
0x000003B0-0x000003BB	RAGE XL PCI Family (Microsoft Corporation)	OK	0x000000CC-0x000000CF	Motherboard resources
0x000003C0-0x000003DF	RAGE XL PCI Family (Microsoft Corporation)	OK	OK	
0x00001000-0x0000100F	Intel(r) 82801DB Ultra ATA Storage Controller-24CB	OK	0x000000D0-0x000000D1	Motherboard resources
0x000001F0-0x000001F7	Primary IDE Channel	OK	OK	
0x000003F6-0x000003F6	Primary IDE Channel	OK	0x000000C0-0x000000C7	Motherboard resources
0x00000170-0x00000177	Secondary IDE Channel	OK	OK	
0x00000376-0x00000376	Secondary IDE Channel	OK	0x00000020-0x00000021	Programmable interrupt controller OK
			OK	
			0x000000A0-0x000000A1	Programmable interrupt controller OK
			OK	
			0x00000081-0x00000083	Direct memory access controller OK
			OK	
			0x00000087-0x00000087	Direct memory access controller OK
			OK	
			0x00000089-0x0000008B	Direct memory access controller OK
			OK	
			0x0000008F-0x0000008F	Direct memory access controller OK
			OK	
			0x000000C0-0x000000DF	Direct memory access controller OK
			OK	
			0x00000040-0x00000043	System timer OK
			0x00000070-0x00000071	System CMOS/real time clock OK
			OK	
			0x00000061-0x00000061	System speaker OK
			0x0000002E-0x0000002F	Motherboard resources
			OK	
			0x000003F0-0x000003F5	Standard floppy disk controller OK
			OK	
			0x000003F7-0x000003F7	Standard floppy disk controller OK
			OK	
			0x000003F8-0x000003FF	Communications Port (COM1) OK
			OK	
			0x000002F8-0x000002FF	Communications Port (COM2) OK
			OK	
			0x00000378-0x0000037F	Unsupported Printer Port (LPT1) OK
			OK	
			0x00007000-0x00009FFF	PCI bus OK
			OK	
			0x00007000-0x00009FFF	Intel(r) 82870 Hub Interface to PCI Bridges
			OK	

0x00009000-0x00009FFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0x00009E00-0x00009EFF	QLogic QLA2200 PCI
Fibre Channel Adapter	OK
0x00009B00-0x00009BFF	LSI Logic PCI-X Ultra320
SCSI Host Adapter	OK
0x00009D00-0x00009DFF	LSI Logic PCI-X Ultra320
SCSI Host Adapter	OK
0x0000A000-0x0000CFFF	PCI bus
0x0000A000-0x0000CFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0x0000AA00-0x0000AAFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0x0000AE00-0x0000AEFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0x0000B000-0x0000CFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0x0000BA00-0x0000BAFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0x0000BE00-0x0000BEFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0x0000D000-0x0000EFFF	PCI bus
0x0000D000-0x0000EFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0x0000DA00-0x0000DAFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0x0000DE00-0x0000DEFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0x0000E000-0x0000EFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0x0000EA00-0x0000EAFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0x0000EE00-0x0000EEFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK

[IRQs]

Resource	Device	Status
IRQ 9	Microsoft ACPI-Compliant System	OK
IRQ 16	Intel(r) 82801DB/DBM USB Universal Host Controller - 24C2	OK
IRQ 19	Intel(r) 82801DB/DBM USB Universal Host Controller - 24C4	OK
IRQ 18	Intel(R) PRO/1000 MT Network Connection	OK
IRQ 14	Primary IDE Channel	OK
IRQ 15	Secondary IDE Channel	OK
IRQ 0	System timer	OK
IRQ 8	System CMOS/real time clock	OK
IRQ 6	Standard floppy disk controller	OK
IRQ 4	Communications Port (COM1)	OK
IRQ 3	Communications Port (COM2)	OK
IRQ 7	Unsupported Printer Port (LPT1)	OK
IRQ 5	Intel(r) 82870 Hot Plug controller	OK
IRQ 5	Intel(r) 82870 Hot Plug controller	OK
IRQ 5	Intel(r) 82870 Hot Plug controller	OK
IRQ 5	Intel(r) 82870 Hot Plug controller	OK
IRQ 5	Intel(r) 82870 Hot Plug controller	OK
IRQ 24	QLogic QLA2200 PCI Fibre Channel Adapter	OK
IRQ 28	LSI Logic PCI-X Ultra320 SCSI Host Adapter	OK

IRQ 29	LSI Logic PCI-X Ultra320 SCSI Host Adapter
	OK
IRQ 96	QLogic QLA23xx PCI Fibre Channel Adapter
	OK
IRQ 97	QLogic QLA23xx PCI Fibre Channel Adapter
	OK
IRQ 76	QLogic QLA23xx PCI Fibre Channel Adapter
	OK
IRQ 77	QLogic QLA23xx PCI Fibre Channel Adapter
	OK
IRQ 144	QLogic QLA23xx PCI Fibre Channel Adapter
	OK
IRQ 145	QLogic QLA23xx PCI Fibre Channel Adapter
	OK
IRQ 120	QLogic QLA23xx PCI Fibre Channel Adapter
	OK
IRQ 121	QLogic QLA23xx PCI Fibre Channel Adapter
	OK

[Memory]

Resource	Device	Status
0xA0000-0xFFFFF	PCI bus	OK
0xA0000-0xFFFFF	RAGE XL PCI Family (Microsoft Corporation)	OK
0xFA000000-0xFBFFFFFF	PCI bus	OK
0xFA000000-0xFBFFFFFF	RAGE XL PCI Family (Microsoft Corporation)	OK
0xFEC00000-0xFEC0FFFF	PCI bus	OK
0xFEC00000-0xFEC0FFFF	Motherboard resources	OK
0xFBFE0000-0xFBFFFFFF	Intel(R) PRO/1000 MT Network Connection	OK
0xFBFD0000-0xFBFD0FFF	RAGE XL PCI Family (Microsoft Corporation)	OK
0xFBFD0000-0xFBFD0FFF	Intel(r) 82801DB Ultra	OK
0xFEE00000-0xFEE0FFFF	ATA Storage Controller-24CB	OK
0xFEE00000-0xFEE0FFFF	Motherboard resources	OK
0xE8000000-0xF9FFFFFF	PCI bus	OK
0xE8000000-0xF9FFFFFF	Intel(r) 82870 Hub	OK
Interface to PCI Bridges		OK
0xFEC10000-0xFEC2FFFF	PCI bus	OK
0xF3FF0000-0xF3FF0FFF	Intel(r) 82870 I/OxAPIC	OK
Interrupt Controller	OK	
0xF4000000-0xF9CFFFFF	Intel(r) 82870 Hub	OK
Interface to PCI Bridges		OK
0xF2EF0000-0xF2EF0FFF	Intel(r) 82870 Hot Plug controller	OK
0xF3FE0000-0xF3FE0FFF	Intel(r) 82870 I/OxAPIC	OK
Interrupt Controller	OK	
0xF9D00000-0xF9FFFFFF	Intel(r) 82870 Hub	OK
Interface to PCI Bridges		OK
0xF2F00000-0xF2FFFFFF	Intel(r) 82870 Hub	OK
Interface to PCI Bridges		OK
0xF9FF0000-0xF9FF0FFF	QLogic QLA2200 PCI Fibre Channel Adapter	OK
0xF9FA0000-0xF9FAFFFF	LSI Logic PCI-X Ultra320 SCSI Host Adapter	OK
0xF9F90000-0xF9F9FFFF	LSI Logic PCI-X Ultra320 SCSI Host Adapter	OK
0xF9FE0000-0xF9FEFFFF	LSI Logic PCI-X Ultra320 SCSI Host Adapter	OK
0xF9FB0000-0xF9FBFFFF	LSI Logic PCI-X Ultra320 SCSI Host Adapter	OK
0xF2FF0000-0xF2FF0FFF	Intel(r) 82870 Hot Plug controller	OK
0xDF000000-0xE7FFFFFF	PCI bus	OK
0xFEC30000-0xFEC4FFFF	PCI bus	OK

0xE5DF0000-0xE5DF0FFF	Intel(r) 82870 I/OxAPIC
Interrupt Controller OK	
0xE5E00000-0xE5EFFFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0xDFF00000-0xDFFFFFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0xE5EE0000-0xE5EE0FFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0xE5EF0000-0xE5EF0FFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0xDFFF0000-0xDFFF0FFF	Intel(r) 82870 Hot Plug
controller OK	
0xE5DE0000-0xE5DE0FFF	Intel(r) 82870 I/OxAPIC
Interrupt Controller OK	
0xE5F00000-0xE5FFFFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0xE0000000-0xE4FFFFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0xE5FE0000-0xE5FE0FFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0xE5FF0000-0xE5FF0FFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0xE4FF0000-0xE4FF0FFF	Intel(r) 82870 Hot Plug
controller OK	
0xDD000000-0xDEFFFFFF	PCI bus OK
0xFEC50000-0xFECFFFFFF	PCI bus OK
0xDEDF0000-0xDEDF0FFF	Intel(r) 82870 I/OxAPIC
Interrupt Controller OK	
0xDEE00000-0xDEEFFFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0xDDE00000-0xDDEFFFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0xDEEE0000-0xDEEE0FFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0xDEEF0000-0xDEEF0FFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0xDDEF0000-0xDDEF0FFF	Intel(r) 82870 Hot Plug
controller OK	
0xDEDE0000-0xDEDE0FFF	Intel(r) 82870 I/OxAPIC
Interrupt Controller OK	
0xDEFF0000-0xDEFFFFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0xDDF00000-0xDDFFFFFF	Intel(r) 82870 Hub
Interface to PCI Bridges	OK
0xDEFE0000-0xDEFE0FFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0xDEFF0000-0xDEFF0FFF	QLogic QLA23xx PCI
Fibre Channel Adapter	OK
0xDDFF0000-0xDDFF0FFF	Intel(r) 82870 Hot Plug
controller OK	

[Components]

[Multimedia]

[Audio Codecs]

CODEC	Manufacturer	Description
	Status File	Version Size
	Creation Date	
c:\windows\system32\imaadp32.acm	Microsoft	
Corporation	OK	
	C:\WINDOWS\system32\IMAADP32.ACM	
	5.2.3790.0 (srv03_rtm.030324-2048)	55.00
KB (56,320 bytes)	3/25/2003 5:00 AM	

c:\windows\system32\msadp32.acm	Microsoft
Corporation	OK
	C:\WINDOWS\system32\MSADP32.ACM
	5.2.3790.0 (srv03_rtm.030324-2048)
KB (50,176 bytes)	3/25/2003 5:00 AM
c:\windows\system32\msgsm32.acm	Microsoft
Corporation	OK
	C:\WINDOWS\system32\MSGSM32.ACM
	5.2.3790.0 (srv03_rtm.030324-2048)
KB (68,096 bytes)	3/25/2003 5:00 AM
c:\windows\system32\msg711.acm	Microsoft
Corporation	OK
	C:\WINDOWS\system32\MSG711.ACM
	5.2.3790.0 (srv03_rtm.030324-2048)
KB (33,792 bytes)	3/25/2003 5:00 AM
c:\windows\system32\tsoft32.acm	DSP GROUP,
INC.	OK
	C:\WINDOWS\system32\TSOFT32.ACM 1.01
	29.00 KB (29,696 bytes)
AM	3/25/2003 5:00

[Video Codecs]

CODEC	Manufacturer	Description
	Status File	Version Size
	Creation Date	
c:\windows\system32\mrle32.dll	Microsoft Corporation	
	OK	
	C:\WINDOWS\system32\MSRLE32.DLL	
	5.2.3790.0 (srv03_rtm.030324-2048)	24.50
KB (25,088 bytes)	3/25/2003 5:00 AM	
c:\windows\system32\msvidc32.dll	Microsoft	
Corporation	OK	
	C:\WINDOWS\system32\MSVIDC32.DLL	
	5.2.3790.0 (srv03_rtm.030324-2048)	67.00
KB (68,608 bytes)	3/25/2003 5:00 AM	

[CD-ROM]

Item	Value
Drive	Volume{fc7e9ce0-9c28-11d7-b4ed-806e6f6e6963}
Description	CD-ROM Drive
Media Loaded	No
Media Type	CD-ROM
Name	MATSHITA DVD-ROM SR-8176
Manufacturer	(Standard CD-ROM drives)
Status	OK
Transfer Rate	Not Available
SCSI Target ID	0
PNP Device ID	IDE\CDROMMATSHITA_DVD-ROM_SR-8176_____MZ31____\5&21C515B&0&0.0.0

Driver c:\windows\system32\drivers\cdrom.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 143.50 KB (146,944 bytes), 3/25/2003 5:00 AM)

[Sound Device]

Item	Value
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[Display]

Item	Value
Name	RAGE XL PCI Family (Microsoft Corporation)
PNP Device ID	PCI\VEN_1002&DEV_4752&SUBSYS_80081002&REV_27\4&2AF9ED5&0&08F0

Adapter Type ATI RAGE XL PCI (B41), ATI Technologies Inc. compatible
Adapter Description RAGE XL PCI Family (Microsoft Corporation)
Adapter RAM 8.00 MB (8,388,608 bytes)
Installed Drivers ati2drad.dll
Driver Version 5.10.3663.6013
INF File atiixpad.inf (ati2mpad section)
Color Planes 1
Color Table Entries 4294967296
Resolution 1152 x 864 x 75 hertz
Bits/Pixel 32
Memory Address 0xFA000000-0xFBFFFFFF
I/O Port 0x00006E00-0x00006EFF
Memory Address 0xFBFD0000-0xFBFD0FFF
I/O Port 0x000003B0-0x000003BB
I/O Port 0x000003C0-0x000003DF
Memory Address 0xA0000-0xFFFFF
Driver c:\windows\system32\drivers\ati2mpad.sys (5.10.3663.6013, 1.00 MB (1,051,648 bytes), 6/11/2003 9:57 AM)

[Infrared]

Item Value

[Input]

[Keyboard]

Item Value
Description USB Human Interface Device
Name Enhanced (101 - or 102 -key)
Layout 00000409
PNP Device ID
USB\VID_0666&PID_0101&MI_00\6&79B7249
&0&0000
Number of Function Keys 12
Driver c:\windows\system32\drivers\hidusb.sys (5.2.3790.0 (srv03_rtm.030324-2048), 32.00 KB (32,768 bytes), 3/25/2003 5:00 AM)

[Pointing Device]

Item Value
Hardware Type USB Human Interface Device
Number of Buttons 3
Status OK
PNP Device ID
USB\VID_0666&PID_0101&MI_01\6&79B7249
&0&0001
Power Management Supported No
Double Click Threshold 6
Handedness Right Handed Operation
Driver c:\windows\system32\drivers\hidusb.sys (5.2.3790.0 (srv03_rtm.030324-2048), 32.00 KB (32,768 bytes), 3/25/2003 5:00 AM)

[Modem]

Item Value

[Network]

[Adapter]

Item Value
Name [00000001] Intel(R) PRO/1000 MT Network
Connection
Adapter Type Ethernet 802.3
Product Type Intel(R) PRO/1000 MT Network
Connection
Installed Yes
PNP Device ID
PCI\VEN_8086&DEV_100E&SUBSYS_34028086&REV_02\4&2AF9ED5&0&00F0
Last Reset 6/24/2003 9:37 PM
Index 1
Service Name E1000
IP Address 10.2.86.18
IP Subnet 255.255.255.0
Default IP Gateway 10.2.86.1
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:02:B3:00:07:44
Memory Address 0xFBFE0000-0xFBFFFFFF
I/O Port 0x00006FC0-0x00006FFF
IRQ Channel IRQ 18
Driver c:\windows\system32\drivers\e1000645.sys (6.3.6.31 built by: WinDDK, 363.00 KB (371,712 bytes), 6/11/2003 9:57 AM)

Name [00000002] RAS Async Adapter
Adapter Type Not Available
Product Type RAS Async Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 6/24/2003 9:37 PM
Index 2
Service Name AsyncMac
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000003] WAN Miniport (L2TP)
Adapter Type Not Available
Product Type WAN Miniport (L2TP)
Installed Yes
PNP Device ID ROOT\MS_L2TPMINIPOINT\0000
Last Reset 6/24/2003 9:37 PM
Index 3
Service Name Rasl2tp
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000004] WAN Miniport (PPTP)
Adapter Type Wide Area Network (WAN)
Product Type WAN Miniport (PPTP)
Installed Yes
PNP Device ID ROOT\MS_PPTPMINIPOINT\0000
Last Reset 6/24/2003 9:37 PM

Index 4
Service Name PtpMiniport
IP AddressNot Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 50:50:54:50:30:30

Name [00000005] WAN Miniport (PPPOE)
Adapter Type Wide Area Network (WAN)
Product Type WAN Miniport (PPPOE)
Installed Yes
PNP Device ID ROOT\MS_PPPOEMINIORT\0000

Last Reset 6/24/2003 9:37 PM
Index 5
Service Name RasPppoe
IP AddressNot Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 33:50:6F:45:30:30

Name [00000006] Direct Parallel
Adapter Type Not Available
Product Type Direct Parallel
Installed Yes
PNP Device ID ROOT\MS_PTIMINIORT\0000

Last Reset 6/24/2003 9:37 PM
Index 6
Service Name Raspti
IP AddressNot Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000007] WAN Miniport (IP)
Adapter Type Not Available
Product Type WAN Miniport (IP)
Installed Yes
PNP Device ID ROOT\MS_NDISWANIP\0000
Last Reset 6/24/2003 9:37 PM

Index 7
Service Name NdisWan
IP AddressNot Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

[Protocol]

Item Value
Name MSAFD Tcpip [TCP/IP]
Connectionless Service No
Guarantees Delivery Yes

Guarantees Sequencing Yes
Maximum Address Size 16 bytes
Maximum Message Size 0 bytes
Message Oriented No
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data Yes
Supports Graceful Closing Yes
Supports Guaranteed Bandwidth No
Supports MulticastingNo

Name MSAFD Tcpip [UDP/IP]
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 16 bytes
Maximum Message Size 63.93 KB (65,467 bytes)

Message Oriented Yes
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No
Supports MulticastingYes

Name RSVP UDP Service Provider
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 16 bytes
Maximum Message Size 63.93 KB (65,467 bytes)

Message Oriented Yes
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcast ing Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption Yes
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No
Supports MulticastingYes

Name RSVP TCP Service Provider
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 16 bytes
Maximum Message Size 0 bytes
Message Oriented No
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption Yes
Supports Expedited Data Yes
Supports Graceful Closing Yes
Supports Guaranteed Bandwidth No
Supports MulticastingNo

[WinSock]

Item	Value
File	c:\windows\system32\wsock32.dll
Size	23.00 KB (23,552 bytes)
Version	5.2.3790.0 (srv03_rtm.030324-2048)

[Ports]

[Serial]

Item	Value
Name	Communications Port (COM1)
Status	OK
PNP Device ID	ACPI\PNP0501\1
Maximum Input Buffer Size	0
Maximum Output Buffer Size	No
Settable Baud Rate	Yes
Settable Data Bits	Yes
Settable Flow Control	Yes
Settable Parity	Yes
Settable Parity Check	Yes
Settable Stop Bits	Yes
Settable RLSD	Yes
Supports RLSD	Yes
Supports 16 Bit Mode	No
Supports Special Characters	No
Baud Rate	9600
Bits/Byte	8
Stop Bits	1
Parity	None
Busy	No
Abort Read/Write on Error	No
Binary Mode Enabled	Yes
Continue XMit on XOff	No
CTS Outflow Control	No
Discard NULL Bytes	No
DSR Outflow Control	0
DSR Sensitivity	0
DTR Flow Control Type	Enable
EOF Character	0
Error Replace Character	0
Error Replacement Enabled	No
Event Character	0
Parity Check Enabled	No
RTS Flow Control Type	Enable
XOff Character	19
XOffXMit Threshold	512
XOn Character	17
XOnXMit Threshold	2048
XOnXOff InFlow Control	0
XOnXOff OutFlow Control	0
I/O Port	0x000003F8-0x000003FF
IRQ Channel	IRQ 4
Driver	c:\windows\system32\drivers\serial.sys (5.2.3790.0 (srv03_rtm.030324-2048), 174.50 KB (178,688 bytes), 3/25/2003 5:00 AM)

Name	Communications Port (COM2)
Status	OK
PNP Device ID	ACPI\PNP0501\2
Maximum Input Buffer Size	0
Maximum Output Buffer Size	No
Settable Baud Rate	Yes
Settable Data Bits	Yes
Settable Flow Control	Yes
Settable Parity	Yes

Settable Parity Check	Yes
Settable Stop Bits	Yes
Settable RLSD	Yes
Supports RLSD	Yes
Supports 16 Bit Mode	No
Supports Special Characters	No
Baud Rate	9600
Bits/Byte	8
Stop Bits	1
Parity	None
Busy	No
Abort Read/Write on Error	No
Binary Mode Enabled	Yes
Continue XMit on XOff	No
CTS Outflow Control	No
Discard NULL Bytes	No
DSR Outflow Control	0
DSR Sensitivity	0
DTR Flow Control Type	Enable
EOF Character	0
Error Replace Character	0
Error Replacement Enabled	No
Event Character	0
Parity Check Enabled	No
RTS Flow Control Type	Enable
XOff Character	19
XOffXMit Threshold	512
XOn Character	17
XOnXMit Threshold	2048
XOnXOff InFlow Control	0
XOnXOff OutFlow Control	0
I/O Port	0x000002F8-0x000002FF
IRQ Channel	IRQ 3
Driver	c:\windows\system32\drivers\serial.sys (5.2.3790.0 (srv03_rtm.030324-2048), 174.50 KB (178,688 bytes), 3/25/2003 5:00 AM)

[Parallel]

Item	Value
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[Storage]

[Drives]

Item	Value
Drive A:	
Description	3 1/2 Inch Floppy Drive

Drive C:	
Description	Local Fixed Disk
Compressed	No
File System	NTFS
Size	33.71 GB (36,199,456,768 bytes)
Free Space	19.86 GB (21,324,689,408 bytes)
Volume Name	
Volume Serial Number	60BA9AC1

Drive D:	
Description	Local Fixed Disk
Compressed	No
File System	NTFS
Size	34.18 GB (36,701,163,520 bytes)
Free Space	11.83 GB (12,703,854,592 bytes)
Volume Name	
Volume Serial Number	0C664161

Drive E:	
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Description Local Fixed Disk
Compressed No
File System NTFS
Size 171.12 GB (183,741,968,384 bytes)
Free Space 38.16 GB (40,970,125,312 bytes)
Volume Name Flatdata
Volume Serial Number 486E7D71

Drive F:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 17.09 GB (18,350,075,904 bytes)
Free Space 15.78 GB (16,939,114,496 bytes)
Volume Name Logfile0
Volume Serial Number 0CCBB835

Drive G:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 17.09 GB (18,350,075,904 bytes)
Free Space 14.17 GB (15,219,929,088 bytes)
Volume Name Logfile1
Volume Serial Number F0EA36BF

Drive H:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 17.09 GB (18,350,075,904 bytes)
Free Space 17.03 GB (18,281,811,968 bytes)
Volume Name Logfile2
Volume Serial Number 0008997A

Drive I:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 17.09 GB (18,350,075,904 bytes)
Free Space 17.03 GB (18,281,848,832 bytes)
Volume Name Logfile3
Volume Serial Number EC248660

Drive J:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 52.00 GB (55,834,570,752 bytes)
Free Space 19.20 GB (20,616,986,624 bytes)
Volume Name Backup0
Volume Serial Number 1C2074C9

Drive K:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 52.00 GB (55,834,570,752 bytes)
Free Space 19.25 GB (20,671,512,576 bytes)
Volume Name Backup1
Volume Serial Number 50A7753B

Drive L:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 52.00 GB (55,834,570,752 bytes)
Free Space 19.25 GB (20,671,512,576 bytes)
Volume Name Backup2
Volume Serial Number D4AEE71B

Drive M:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 52.00 GB (55,834,570,752 bytes)
Free Space 16.22 GB (17,415,643,136 bytes)
Volume Name Backup3
Volume Serial Number F0B734B9

[Disks]

Item	Value
Description	Disk drive
Manufacturer	(Standard disk drives)
Model	SEAGATE ST318451 CLAR18 SCSI Disk Device
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk
Partitions	1
SCSI Bus	0
SCSI Logical Unit	0
SCSI Port	10
SCSI Target ID	0
Sectors/Track	63
Size	17.11 GB (18,375,275,520 bytes)
Total Cylinders	2,234
Total Sectors	35,889,210
Total Tracks	569,670
Tracks/Cylinder	255
Partition	Disk #112, Partition #0
Partition Size	17.11 GB (18,375,243,264 bytes)
Partition Starting Offset	32,256 bytes

Description	Disk drive
Manufacturer	(Standard disk drives)
Model	SEAGATE ST318451 CLAR18 SCSI Disk Device
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk
Partitions	1
SCSI Bus	0
SCSI Logical Unit	0
SCSI Port	10
SCSI Target ID	1
Sectors/Track	63
Size	17.11 GB (18,375,275,520 bytes)
Total Cylinders	2,234
Total Sectors	35,889,210
Total Tracks	569,670
Tracks/Cylinder	255
Partition	Disk #113, Partition #0
Partition Size	17.11 GB (18,375,243,264 bytes)
Partition Starting Offset	32,256 bytes

Description	Disk drive
Manufacturer	(Standard disk drives)
Model	SEAGATE ST318451 CLAR18 SCSI Disk Device
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk
Partitions	1
SCSI Bus	0
SCSI Logical Unit	0
SCSI Port	10
SCSI Target ID	2
Sectors/Track	63

Size 17.11 GB (18,375,275,520 bytes)
 Total Cylinders 2,234
 Total Sectors 35,889,210
 Total Tracks 569,670
 Tracks/Cylinder 255
 Partition Disk #114, Partition #0
 Partition Size 17.11 GB (18,375,243,264 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318451 CLAR18 SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 10
 SCSI Target ID 3
 Sectors/Track 63
 Size 17.11 GB (18,375,275,520 bytes)
 Total Cylinders 2,234
 Total Sectors 35,889,210
 Total Tracks 569,670
 Tracks/Cylinder 255
 Partition Disk #115, Partition #0
 Partition Size 17.11 GB (18,375,243,264 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318451 CLAR18 SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 10
 SCSI Target ID 4
 Sectors/Track 63
 Size 17.11 GB (18,375,275,520 bytes)
 Total Cylinders 2,234
 Total Sectors 35,889,210
 Total Tracks 569,670
 Tracks/Cylinder 255
 Partition Disk #116, Partition #0
 Partition Size 17.11 GB (18,375,243,264 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318451 CLAR18 SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 10
 SCSI Target ID 5
 Sectors/Track 63
 Size 17.11 GB (18,375,275,520 bytes)
 Total Cylinders 2,234
 Total Sectors 35,889,210
 Total Tracks 569,670

Tracks/Cylinder 255
 Partition Disk #117, Partition #0
 Partition Size 17.11 GB (18,375,243,264 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318451 CLAR18 SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 10
 SCSI Target ID 6
 Sectors/Track 63
 Size 17.11 GB (18,375,275,520 bytes)
 Total Cylinders 2,234
 Total Sectors 35,889,210
 Total Tracks 569,670
 Tracks/Cylinder 255
 Partition Disk #118, Partition #0
 Partition Size 17.11 GB (18,375,243,264 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318451 CLAR18 SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 10
 SCSI Target ID 7
 Sectors/Track 63
 Size 17.11 GB (18,375,275,520 bytes)
 Total Cylinders 2,234
 Total Sectors 35,889,210
 Total Tracks 569,670
 Tracks/Cylinder 255
 Partition Disk #119, Partition #0
 Partition Size 17.11 GB (18,375,243,264 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318451 CLAR18 SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 10
 SCSI Target ID 8
 Sectors/Track 63
 Size 17.11 GB (18,375,275,520 bytes)
 Total Cylinders 2,234
 Total Sectors 35,889,210
 Total Tracks 569,670
 Tracks/Cylinder 255
 Partition Disk #120, Partition #0
 Partition Size 17.11 GB (18,375,243,264 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318451 CLAR18 SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 10
 SCSI Target ID 9
 Sectors/Track 63
 Size 17.11 GB (18,375,275,520 bytes)
 Total Cylinders 2,234
 Total Sectors 35,889,210
 Total Tracks 569,670
 Tracks/Cylinder 255
 Partition Disk #121, Partition #0
 Partition Size 17.11 GB (18,375,243,264 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 0
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #56, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 1
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #57, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes

Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 2
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #58, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 3
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #59, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 4
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #60, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 5
 Sectors/Track 63

Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #61, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 6
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #62, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 7
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #63, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 8
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #64, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)

Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 9
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #65, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 10
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #66, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 11
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #67, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes

Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 12
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #68, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 6
 SCSI Target ID 13
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #69, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 0
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #98, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 1
 Sectors/Track 63

Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #99, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 2
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #100, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 3
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #101, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 4
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #102, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)

Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 5
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #103, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 6
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #104, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 7
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #105, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes

Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 8
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #106, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 9
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #107, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 10
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #108, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 11
 Sectors/Track 63

Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #109, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 12
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #110, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 9
 SCSI Target ID 13
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #111, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 4
 SCSI Target ID 0
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #28, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)

Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 4
 SCSI Target ID 1
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #29, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 4
 SCSI Target ID 2
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #30, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 4
 SCSI Target ID 3
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #31, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes

Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 4
SCSI Target ID 4
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #32, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 4
SCSI Target ID 5
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #33, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 4
SCSI Target ID 6
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #34, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 4
SCSI Target ID 7
Sectors/Track 63

Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #35, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 4
SCSI Target ID 8
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #36, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 4
SCSI Target ID 9
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #37, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 4
SCSI Target ID 10
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #38, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)

Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 4
 SCSI Target ID 11
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #39, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 4
 SCSI Target ID 12
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #40, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 4
 SCSI Target ID 13
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #41, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes

Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 5
 SCSI Target ID 0
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #42, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 5
 SCSI Target ID 1
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #43, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 5
 SCSI Target ID 2
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #44, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 5
 SCSI Target ID 3
 Sectors/Track 63

Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #45, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 5
 SCSI Target ID 4
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #46, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 5
 SCSI Target ID 5
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #47, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 5
 SCSI Target ID 6
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #48, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)

Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 5
 SCSI Target ID 7
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #49, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 5
 SCSI Target ID 8
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #50, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 5
 SCSI Target ID 9
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #51, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes

Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 5
SCSI Target ID 10
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #52, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 5
SCSI Target ID 11
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #53, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 5
SCSI Target ID 12
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #54, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 5
SCSI Target ID 13
Sectors/Track 63

Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #55, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 7
SCSI Target ID 0
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #70, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 7
SCSI Target ID 1
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #71, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 7
SCSI Target ID 2
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #72, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)

Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 7
 SCSI Target ID 3
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #73, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 7
 SCSI Target ID 4
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #74, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 7
 SCSI Target ID 5
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #75, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes

Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 7
 SCSI Target ID 6
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #76, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 7
 SCSI Target ID 7
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #77, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 7
 SCSI Target ID 8
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #78, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 7
 SCSI Target ID 9
 Sectors/Track 63

Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #79, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 7
 SCSI Target ID 10
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #80, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 7
 SCSI Target ID 11
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #81, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 7
 SCSI Target ID 12
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #82, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)

Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 7
 SCSI Target ID 13
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #83, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 0
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #0, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 1
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #1, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes

Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 2
SCSI Target ID 2
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #2, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 2
SCSI Target ID 3
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #3, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 2
SCSI Target ID 4
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #4, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 2
SCSI Target ID 5
Sectors/Track 63

Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #5, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 2
SCSI Target ID 6
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #6, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 2
SCSI Target ID 7
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #7, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 2
SCSI Target ID 8
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #8, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)

Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 9
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #9, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 10
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #10, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 11
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #11, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes

Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 12
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #12, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 13
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #13, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 3
 SCSI Target ID 0
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #14, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 3
 SCSI Target ID 1
 Sectors/Track 63

Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #15, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 3
 SCSI Target ID 2
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #16, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 3
 SCSI Target ID 3
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #17, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 3
 SCSI Target ID 4
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #18, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)

Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 3
 SCSI Target ID 5
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #19, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 3
 SCSI Target ID 6
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #20, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 3
 SCSI Target ID 7
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #21, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes

Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 3
SCSI Target ID 8
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #22, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 3
SCSI Target ID 9
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #23, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 3
SCSI Target ID 10
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #24, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 3
SCSI Target ID 11
Sectors/Track 63

Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #25, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 3
SCSI Target ID 12
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #26, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 3
SCSI Target ID 13
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #27, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318452FC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 8
SCSI Target ID 0
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #84, Partition #0
Partition Size 17.09 GB (18,350,567,424 bytes)

Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 1
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #85, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 2
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #86, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 3
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #87, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes

Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 4
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #88, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 5
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #89, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 6
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #90, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 7
 Sectors/Track 63

Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #91, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 8
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #92, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 9
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #93, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 10
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #94, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)

Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 11
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #95, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 12
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #96, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST318452FC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 8
 SCSI Target ID 13
 Sectors/Track 63
 Size 17.09 GB (18,350,599,680 bytes)
 Total Cylinders 2,231
 Total Sectors 35,841,015
 Total Tracks 568,905
 Tracks/Cylinder 255
 Partition Disk #97, Partition #0
 Partition Size 17.09 GB (18,350,567,424 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model SEAGATE ST336752LC SCSI Disk Device
 Bytes/Sector 512
 Media Loaded No

Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 11
SCSI Target ID 0
Sectors/Track 63
Size 34.18 GB (36,701,199,360 bytes)
Total Cylinders 4,462
Total Sectors 71,682,030
Total Tracks 1,137,810
Tracks/Cylinder 255
Partition Disk #122, Partition #0
Partition Size 352.96 MB (370,105,344 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #122, Partition #1
Partition Size 33.71 GB (36,199,457,280 bytes)
Partition Starting Offset 501,742,080 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST336752LC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 11
SCSI Target ID 1
Sectors/Track 63
Size 34.18 GB (36,701,199,360 bytes)
Total Cylinders 4,462
Total Sectors 71,682,030
Total Tracks 1,137,810
Tracks/Cylinder 255
Partition Disk #123, Partition #0
Partition Size 34.18 GB (36,701,167,104 bytes)
Partition Starting Offset 32,256 bytes

[SCSI]

Item	Value
Name	QLogic QLA2200 PCI Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2200&SUBSYS_000210
77&REV_05\4&31EC0629&0&08F8
I/O Port 0x00009E00-0x00009EFF
Memory Address 0xF9FF0000-0xF9FF0FFF
IRQ Channel IRQ 24
Driver c:\windows\system32\drivers\ql2200.sys (8.1.5.3, 303.50 KB (310,784 bytes), 3/25/2003 5:00 AM)

Name LSI Logic PCI-X Ultra320 SCSI Host Adapter

Manufacturer LSI Logic Inc.
Status OK
PNP Device ID
PCI\VEN_1000&DEV_0030&SUBSYS_340280
86&REV_07\4&31EC0629&0&10F8
I/O Port 0x00009B00-0x00009BFF
Memory Address 0xF9FA0000-0xF9FAFFFF
Memory Address 0xF9F90000-0xF9F9FFFF
IRQ Channel IRQ 28
Driver c:\windows\system32\drivers\symmpi.sys (1.08.18.00 (NT.021001-2000), 79.38 KB (81,280 bytes), 3/25/2003 5:00 AM)

Name LSI Logic PCI-X Ultra320 SCSI Host Adapter

Manufacturer LSI Logic Inc.
Status OK
PNP Device ID
PCI\VEN_1000&DEV_0030&SUBSYS_340280
86&REV_07\4&31EC0629&0&11F8
I/O Port 0x00009D00-0x00009DFF
Memory Address 0xF9FE0000-0xF9FEFFFF
Memory Address 0xF9FB0000-0xF9FBFFFF
IRQ Channel IRQ 29
Driver c:\windows\system32\drivers\symmpi.sys (1.08.18.00 (NT.021001-2000), 79.38 KB (81,280 bytes), 3/25/2003 5:00 AM)

Name QLogic QLA23xx PCI Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_010110
77&REV_02\4&1F0F3F57&0&08E8
I/O Port 0x0000AA00-0x0000AAFF
Memory Address 0xE5EE0000-0xE5EE0FFF
IRQ Channel IRQ 96
Driver c:\windows\system32\drivers\ql2300.sys (8.2.1 Beta 2 (W64 VI), 680.75 KB (697,088 bytes), 6/11/2003 5:41 PM)

Name QLogic QLA23xx PCI Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_010110
77&REV_02\4&1F0F3F57&0&09E8
I/O Port 0x0000AE00-0x0000AEFF
Memory Address 0xE5EF0000-0xE5EF0FFF
IRQ Channel IRQ 97
Driver c:\windows\system32\drivers\ql2300.sys (8.2.1 Beta 2 (W64 VI), 680.75 KB (697,088 bytes), 6/11/2003 5:41 PM)

Name QLogic QLA23xx PCI Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_010110
77&REV_02\4&F809137&0&10F8
I/O Port 0x0000BA00-0x0000BAFF
Memory Address 0xE5FE0000-0xE5FE0FFF
IRQ Channel IRQ 76
Driver c:\windows\system32\drivers\ql2300.sys (8.2.1 Beta 2 (W64 VI), 680.75 KB (697,088 bytes), 6/11/2003 5:41 PM)

Name QLogic QLA23xx PCI Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_010110
77&REV_02\4&F809137&0&11F8
I/O Port 0x0000BE00-0x0000BEFF
Memory Address 0xE5FF0000-0xE5FF0FFF
IRQ Channel IRQ 77

Driver c:\windows\system32\drivers\ql2300.sys (8.2.1
Beta 2 (W64 VI), 680.75 KB (697,088 bytes), 6/11/2003 5:41
PM)

Name QLogic QLA23xx PCI Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_010110
77&REV_02\4&596E9D4&0&08E8
I/O Port 0x0000DA00-0x0000DAFF
Memory Address 0xDEEE0000-0xDEEE0FFF
IRQ Channel IRQ 144
Driver c:\windows\system32\drivers\ql2300.sys (8.2.1
Beta 2 (W64 VI), 680.75 KB (697,088 bytes), 6/11/2003 5:41
PM)

Name QLogic QLA23xx PCI Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_010110
77&REV_02\4&596E9D4&0&09E8
I/O Port 0x0000DE00-0x0000DEFF
Memory Address 0xDEEF0000-0xDEEF0FFF
IRQ Channel IRQ 145
Driver c:\windows\system32\drivers\ql2300.sys (8.2.1
Beta 2 (W64 VI), 680.75 KB (697,088 bytes), 6/11/2003 5:41
PM)

Name QLogic QLA23xx PCI Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_010110
77&REV_02\4&9F7C44C&0&08F8
I/O Port 0x0000EA00-0x0000EAFF
Memory Address 0xDEFE0000-0xDEFE0FFF
IRQ Channel IRQ 120
Driver c:\windows\system32\drivers\ql2300.sys (8.2.1
Beta 2 (W64 VI), 680.75 KB (697,088 bytes), 6/11/2003 5:41
PM)

Name QLogic QLA23xx PCI Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_010110
77&REV_02\4&9F7C44C&0&09F8
I/O Port 0x0000EE00-0x0000EEFF
Memory Address 0xDEFF0000-0xDEFF0FFF
IRQ Channel IRQ 121
Driver c:\windows\system32\drivers\ql2300.sys (8.2.1
Beta 2 (W64 VI), 680.75 KB (697,088 bytes), 6/11/2003 5:41
PM)

[IDE]

Item	Value
Name	Intel(r) 82801DB Ultra ATA Storage Controller - 24CB
Manufacturer	Intel
Status	OK
PNP Device ID	PCI\VEN_8086&DEV_24CB&SUBSYS_000000 00&REV_01\3&267A616A&0&F9

I/O Port 0x00001000-0x0000100F
Memory Address 0xFBFD0000-0xFBFDFFFF
Driver c:\windows\system32\drivers\intelide.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 11.50 KB (11,776
bytes), 6/11/2003 9:56 AM)

Name Primary IDE Channel
Manufacturer (Standard IDE ATA/ATAPI
controllers)
Status OK
PNP Device ID
PCIIDE\IDECHANNEL\4&4C2EC9A&0&0

I/O Port 0x000001F0-0x000001F7
I/O Port 0x000003F6-0x000003F6
IRQ Channel IRQ 14
Driver c:\windows\system32\drivers\atapi.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 281.50 KB (288,256
bytes), 3/25/2003 5:00 AM)

Name Secondary IDE Channel
Manufacturer (Standard IDE ATA/ATAPI
controllers)
Status OK
PNP Device ID
PCIIDE\IDECHANNEL\4&4C2EC9A&0&1

I/O Port 0x00000170-0x00000177
I/O Port 0x00000376-0x00000376
IRQ Channel IRQ 15
Driver c:\windows\system32\drivers\atapi.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 281.50 KB (288,256
bytes), 3/25/2003 5:00 AM)

[Printing]

Name	Driver	Port Name	Server Name
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[Problem Devices]

Device	PNP Device ID	Error Code
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[USB]

Device PNP Device ID
Intel(r) 82801DB/DBM USB Universal Host Controller -
24C2

PCI\VEN_8086&DEV_24C2&SUBSYS_000000
00&REV_01\3&267A616A&0&E8
USB Root Hub USB\ROOT_HUB\4&74C8736&0

Intel(r) 82801DB/DBM USB Universal Host Controller -
24C4

PCI\VEN_8086&DEV_24C4&SUBSYS_000000
00&REV_01\3&267A616A&0&E9
USB Root Hub USB\ROOT_HUB\4&84AD92A&0

USB Composite Device
USB\VID_0666&PID_0101\5&ECD0C86&0&2

USB Human Interface Device
USB\VID_0666&PID_0101&MI_00\6&79B7249
&0&0000

HID Keyboard Device
HID\VID_0666&PID_0101&MI_00\7&D37C6E
3&0&0000

USB Human Interface Device
USB\VID_0666&PID_0101&MI_01\6&79B7249
&0&0001

HID-compliant mouse
HID\VID_0666&PID_0101&MI_01\7&5F8555B
&0&0000

[Software Environment]

[System Drivers]

Name	Description	File	Type	Status	Error
Control	Accept Pause	Accept Stop			
abiosdsk	Abiosdsk	Not Available	Kernel Driver		
	No	Disabled	Stopped	OK	
	Ignore	No	No		
acpi	Microsoft ACPI Driver				
	c:\windows\system32\drivers\acpi.sys				
	Kernel Driver	Yes	Boot		
	Running	OK	Normal	No	Yes
acpiec	ACPIEC				
	c:\windows\system32\drivers\acpiec.sys				
	Kernel Driver	No	Disabled		
	Stopped	OK	Normal	No	No
adpu160m	adpu160m	Not Available	Kernel Driver		
	No	Disabled	Stopped	OK	
	Normal	No	No		
adpu320	adpu320				
	c:\windows\system32\drivers\adpu320.sys				
	Kernel Driver	Yes	Boot		
	Running	OK	Normal	No	Yes
afcnc	afcnc	Not Available	Kernel Driver		
	No	Disabled	Stopped	OK	
	Normal	No	No		
afd	AFD Networking Support Environment				
	c:\windows\system32\drivers\afd.sys				
	Kernel Driver	Yes	Auto		
	Running	OK	Normal	No	Yes
aic78u2	aic78u2	Not Available	Kernel Driver		
	No	Disabled	Stopped	OK	
	Normal	No	No		
aic78xx	aic78xx	Not Available	Kernel Driver		
	No	Disabled	Stopped	OK	
	Normal	No	No		
aliide	AliIde	Not Available	Kernel Driver		
	No	Disabled	Stopped	OK	
	Normal	No	No		
asynmac	RAS Asynchronous Media Driver				
	c:\windows\system32\drivers\asynmac.sys				
	Kernel Driver	No	Manual		
	Stopped	OK	Normal	No	No
atapi	Standard IDE/ESDI Hard Disk Controller				
	c:\windows\system32\drivers\atapi.sys				
	Kernel Driver	Yes	Boot		
	Running	OK	Normal	No	Yes
atdisk	Atdisk	Not Available	Kernel Driver		
	No	Disabled	Stopped	OK	
	Ignore	No	No		
ati2mpad	ati2mpad				
	c:\windows\system32\drivers\ati2mpad.sys				
	Kernel Driver	Yes	Manual		
	Running	OK	Ignore	No	Yes

atmarpc	ATM ARP Client Protocol				
	c:\windows\system32\drivers\atmarpc.sys				
	Kernel Driver	No	Manual		
	Stopped	OK	Normal	No	No
audstub	Audio Stub Driver				
	c:\windows\system32\drivers\audstub.sys				
	Kernel Driver	Yes	Manual		
	Running	OK	Normal	No	Yes
beep	Beep	c:\windows\system32\drivers\beep.sys			
	Kernel Driver	Yes	System		
	Running	OK	Normal	No	Yes
cbidf2k	cbidf2k				
	c:\windows\system32\drivers\cbidf2k.sys				
	Kernel Driver	No	Disabled		
	Stopped	OK	Normal	No	No
cdfs	Cdfs	c:\windows\system32\drivers\cdfs.sys			
	File System Driver	Yes	Disabled		
	Running	OK	Normal	No	Yes
cdrom	CD-ROM Driver				
	c:\windows\system32\drivers\cdrom.sys				
	Kernel Driver	Yes	System		
	Running	OK	Normal	No	Yes
changer	Changer	Not Available	Kernel Driver		
	No	System	Stopped	OK	
	Ignore	No	No		
clusdisk	Cluster Disk Driver				
	c:\windows\system32\drivers\clusdisk.sys				
	Kernel Driver	No	Disabled		
	Stopped	OK	Normal	No	No
cmdide	CmdIde	Not Available	Kernel Driver		
	No	Disabled	Stopped	OK	
	Normal	No	No		
cpqarry2	cpqarry2	Not Available	Kernel Driver		
	No	Disabled	Stopped	OK	
	Normal	No	No		
cpqcissm	cpqcissm	Not Available	Kernel Driver		
	No	Disabled	Stopped	OK	
	Normal	No	No		
cpqfcalm	cpqfcalm	Not Available	Kernel Driver		
	No	Disabled	Stopped	OK	
	Normal	No	No		
crcdisk	CRC Disk Filter Driver				
	c:\windows\system32\drivers\crcdisk.sys				
	Kernel Driver	Yes	Boot		
	Running	OK	Normal	No	Yes
dfsdriver	DfsDriver	c:\windows\system32\drivers\dfs.sys			
	File System Driver	Yes	Boot		
	Running	OK	Normal	No	Yes
disk	Disk Driver				
	c:\windows\system32\drivers\disk.sys				
	Kernel Driver	Yes	Boot		
	Running	OK	Normal	No	Yes
dmboot	dmboot				
	c:\windows\system32\drivers\dmboot.sys				
	Kernel Driver	Yes	Disabled		
	Running	OK	Normal	No	Yes
dmio	Logical Disk Manager Driver				
	c:\windows\system32\drivers\dmio.sys				
	Kernel Driver	Yes	Boot		

	Running	OK	Normal	No	Yes
dmload	dmload c:\windows\system32\drivers\dmload.sys Kernel Driver Running		Yes Boot Normal	No	Yes
e1000	Intel(R) PRO/1000 Device Driver c:\windows\system32\drivers\e1000645.sys Kernel Driver Running		Yes Manual Normal	No	Yes
fastfat	Fastfat c:\windows\system32\drivers\fastfat.sys	File			
System Driver	Yes	Disabled	Running	OK	
fdc	Floppy Disk Controller Driver c:\windows\system32\drivers\fdc.sys Kernel Driver Running	Yes Manual Normal	Yes	No	Yes
fips	Fips c:\windows\system32\drivers\fips.sys Kernel Driver Running	Yes System Normal	No	Yes	
flpydisk	Flpydisk c:\windows\system32\drivers\flpydisk.sys Kernel Driver Stopped	No System Ignore	No	No	
ftdisk	Volume Manager Driver c:\windows\system32\drivers\ftdisk.sys Kernel Driver Running	Yes Boot Normal	No	Yes	
gpc	Generic Packet Classifier c:\windows\system32\drivers\msgpc.sys Kernel Driver Running	Yes Manual Normal	No	Yes	
hidusb	Microsoft HID Class Driver c:\windows\system32\drivers\hidusb.sys Kernel Driver Running	Yes Manual Ignore	No	Yes	
hpn	hpn No	Not Available Disabled	Kernel Driver Stopped	OK	
http	HTTP c:\windows\system32\drivers\http.sys Kernel Driver Stopped	No Manual Normal	No	No	
i2omgmt	i2omgmt No	Not Available System	Kernel Driver Stopped	OK	
imapi	CD-Burning Filter Driver c:\windows\system32\drivers\imapi.sys Kernel Driver Stopped	No System Normal	No	No	
intelide	IntelIde c:\windows\system32\drivers\intelide.sys Kernel Driver Running	Yes Boot Normal	No	Yes	
ipfilterdriver	IP Traffic Filter Driver c:\windows\system32\drivers\ipfltdrv.sys Kernel Driver Stopped	No Manual Normal	No	No	

ipinip	IP in IP Tunnel Driver c:\windows\system32\drivers\ipinip.sys Kernel Driver Stopped	No Manual Normal	No	No	
ipnat	IP Network Address Translator c:\windows\system32\drivers\ipnat.sys Kernel Driver Stopped	No Manual Normal	No	No	
ipsec	IPSEC driver c:\windows\system32\drivers\ipsec.sys Kernel Driver Running	Yes System Normal	No	Yes	
isapnp	PnP ISA/EISA Bus Driver c:\windows\system32\drivers\isapnp.sys Kernel Driver Running	Yes Boot Critical	No	Yes	
kbdclass	Keyboard Class Driver c:\windows\system32\drivers\kbdclass.sys Kernel Driver Running	Yes System Normal	No	Yes	
kbdhid	Keyboard HID Driver c:\windows\system32\drivers\kbdhid.sys Kernel Driver Running	Yes System Ignore	No	Yes	
ksecdd	KSecDD c:\windows\system32\drivers\ksecdd.sys Kernel Driver Running	Yes Boot Normal	No	Yes	
lp6nds35	lp6nds35 No	Not Available Disabled	Kernel Driver Stopped	OK	
mnmd	mnmd No	Not Available System	Kernel Driver Stopped	OK	
modem	Modem c:\windows\system32\drivers\modem.sys Kernel Driver Stopped	No Manual Ignore	No	No	
mouclass	Mouse Class Driver c:\windows\system32\drivers\mouclass.sys Kernel Driver Running	Yes System Normal	No	Yes	
mouhid	Mouse HID Driver c:\windows\system32\drivers\mouhid.sys Kernel Driver Running	Yes Manual Ignore	No	Yes	
mountmgr	Mount Point Manager c:\windows\system32\drivers\mountmgr.sys Kernel Driver Running	Yes Boot Normal	No	Yes	
mraid35x	mraid35x No	Not Available Disabled	Kernel Driver Stopped	OK	
mrxdav	WebDav Client Redirector c:\windows\system32\drivers\mrxdav.sys	No Manual	Stopped	OK	File
mrxsmb	MRXSMB c:\windows\system32\drivers\mrxsmb.sys	No	No	File	

System Driver	Yes	System	Running	OK
Normal	No	Yes		
msfs	Msfs	c:\windows\system32\drivers\msfs.sys		
File System Driver	Yes	System		
Running	OK	Normal	No	Yes
mup	Mup	c:\windows\system32\drivers\mup.sys		
File System Driver	Yes	Boot		
Running	OK	Normal	No	Yes
ndis	NDIS System Driver			
	c:\windows\system32\drivers\ndis.sys			
Kernel Driver	Yes	Boot		
Running	OK	Normal	No	Yes
ndistapi	Remote Access NDIS TAPI Driver			
	c:\windows\system32\drivers\ndistapi.sys			
Kernel Driver	Yes	Manual		
Running	OK	Normal	No	Yes
ndisuio	NDIS Usermode I/O Protocol			
	c:\windows\system32\drivers\ndisuio.sys			
Kernel Driver	No	Manual		
Stopped	OK	Normal	No	No
ndiswan	Remote Access NDIS WAN Driver			
	c:\windows\system32\drivers\ndiswan.sys			
Kernel Driver	Yes	Manual		
Running	OK	Normal	No	Yes
ndproxy	NDIS Proxy			
	c:\windows\system32\drivers\ndproxy.sys			
Kernel Driver	Yes	Manual		
Running	OK	Normal	No	Yes
netbios	NetBIOS Interface			
	c:\windows\system32\drivers\netbios.sys	File		
System Driver	Yes	System	Running	OK
Normal	No	Yes		
netbt	NetBios over Tcpip			
	c:\windows\system32\drivers\netbt.sys			
Kernel Driver	Yes	System		
Running	OK	Normal	No	Yes
nfrd960	nfrd960	Not Available	Kernel Driver	
	No	Disabled	Stopped	OK
	Normal	No	No	
npfs	Npfs	c:\windows\system32\drivers\npfs.sys		
File System Driver	Yes	System		
Running	OK	Normal	No	Yes
ntfs	Ntfs	c:\windows\system32\drivers\ntfs.sys		
File System Driver	Yes	Disabled		
Running	OK	Normal	No	Yes
null	Null	c:\windows\system32\drivers\null.sys		
Kernel Driver	Yes	System		
Running	OK	Normal	No	Yes
partmgr	Partition Manager			
	c:\windows\system32\drivers\partmgr.sys			
Kernel Driver	Yes	Boot		
Running	OK	Normal	No	Yes
pci	PCI Bus Driver			
	c:\windows\system32\drivers\pci.sys			
Kernel Driver	Yes	Boot		
Running	OK	Critical	No	Yes

pciide	PCIIde			
	c:\windows\system32\drivers\pciide.sys			
Kernel Driver	Yes	Boot		
Running	OK	Normal	No	Yes
pcmcia	Pcmcia			
	c:\windows\system32\drivers\pcmcia.sys			
Kernel Driver	No	Disabled		
Stopped	OK	Normal	No	No
pdcomp	PDCOMP	Not Available	Kernel Driver	
	No	Manual	Stopped	OK
	Ignore	No	No	
pdframe	PDFRAME	Not Available		
Kernel Driver	No	Manual		
Stopped	OK	Ignore	No	No
pdreli	PDRELI	Not Available	Kernel Driver	
	No	Manual	Stopped	OK
	Ignore	No	No	
pdrframe	PDRFRAME	Not Available		
Kernel Driver	No	Manual		
Stopped	OK	Ignore	No	No
pptpminiport	WAN Miniport (PPTP)			
	c:\windows\system32\drivers\raspppt.sys			
Kernel Driver	Yes	Manual		
Running	OK	Normal	No	Yes
processor	Processor Driver			
	c:\windows\system32\drivers\processr.sys			
Kernel Driver	Yes	Manual		
Running	OK	Normal	No	Yes
ptilink	Direct Parallel Link Driver			
	c:\windows\system32\drivers\ptilink.sys			
Kernel Driver	Yes	Manual		
Running	OK	Normal	No	Yes
ql1080	ql1080	Not Available	Kernel Driver	
	No	Disabled	Stopped	OK
	Normal	No	No	
ql10wnt	Ql10wnt	Not Available	Kernel Driver	
	No	Disabled	Stopped	OK
	Normal	No	No	
ql12160	ql12160	Not Available	Kernel Driver	
	No	Disabled	Stopped	OK
	Normal	No	No	
ql1240	ql1240	Not Available	Kernel Driver	
	No	Disabled	Stopped	OK
	Normal	No	No	
ql1280	ql1280	Not Available	Kernel Driver	
	No	Disabled	Stopped	OK
	Normal	No	No	
ql12100	ql12100	Not Available	Kernel Driver	
	No	Disabled	Stopped	OK
	Normal	No	No	
ql2200	ql2200			
	c:\windows\system32\drivers\ql2200.sys			
Kernel Driver	Yes	Boot		
Running	OK	Normal	No	Yes
ql2300	ql2300			
	c:\windows\system32\drivers\ql2300.sys			
Kernel Driver	Yes	Boot		
Running	OK	Normal	No	Yes
rasacd	Remote Access Auto Connection Driver			
	c:\windows\system32\drivers\rasacd.sys			
Kernel Driver	Yes	System		

	Running	OK	Normal	No	Yes		symc8xx	symc8xx No	Not Available Disabled	Stopped	Kernel Driver OK
rasl2tp	WAN Miniport (L2TP) c:\windows\system32\drivers\rasl2tp.sys Kernel Driver Yes Manual Running OK Normal No Yes						symmpi	symmpi c:\windows\system32\drivers\symmpi.sys Kernel Driver Yes Boot Running OK Normal No Yes			
rasppoe	Remote Access PPPOE Driver c:\windows\system32\drivers\rasppoe.sys Kernel Driver Yes Manual Running OK Normal No Yes						sym_hi	sym_hi No Disabled Stopped OK Normal No No	Kernel Driver		
raspti	Direct Parallel c:\windows\system32\drivers\raspti.sys Kernel Driver Yes Manual Running OK Normal No Yes						sym_u3	sym_u3 No Disabled Stopped OK Normal No No	Kernel Driver		
rdbss	Rdbss c:\windows\system32\drivers\rdbss.sys File System Driver Yes System Running OK Normal No Yes						tcpip	TCP/IP Protocol Driver c:\windows\system32\drivers\tcpip.sys Kernel Driver Yes System Running OK Normal No Yes			
rdpcdd	RDPCDD c:\windows\system32\drivers\rdpcdd.sys Kernel Driver Yes System Running OK Ignore No Yes						tdpipe	TDPIPE c:\windows\system32\drivers\tdpipe.sys Kernel Driver No Manual Stopped OK Ignore No No			
rdpdr	Terminal Server Device Redirector Driver c:\windows\system32\drivers\rdpdr.sys Kernel Driver Yes Manual Running OK Normal No Yes						tdtcp	TDTCP c:\windows\system32\drivers\tdtcp.sys Kernel Driver Yes Manual Running OK Ignore No Yes			
rdpwd	RDPWD c:\windows\system32\drivers\rdpwd.sys Kernel Driver Yes Manual Running OK Ignore No Yes						termdd	Terminal Device Driver c:\windows\system32\drivers\termdd.sys Kernel Driver Yes System Running OK Normal No Yes			
redbook	Digital CD Audio Playback Filter Driver c:\windows\system32\drivers\redbook.sys Kernel Driver Yes System Running OK Normal No Yes						toside	TosIde Not Available No Disabled Stopped OK Normal No No			
							udfs	Udfs c:\windows\system32\drivers\udfs.sys File System Driver No Disabled Stopped OK Normal No No			
serenum	Serenum Filter Driver c:\windows\system32\drivers\serenum.sys Kernel Driver Yes Manual Running OK Normal No Yes						usbccgp	Microsoft USB Generic Parent Driver c:\windows\system32\drivers\usbccgp.sys Kernel Driver Yes Manual Running OK Normal No Yes			
serial	Serial port driver c:\windows\system32\drivers\serial.sys Kernel Driver Yes System Running OK Ignore No Yes						usbhub	USB2 Enabled Hub c:\windows\system32\drivers\usbhub.sys Kernel Driver Yes Manual Running OK Normal No Yes			
sfloppy	High-Capacity Floppy Disk Drive c:\windows\system32\drivers\sfloppy.sys Kernel Driver Yes Manual Running OK Normal No Yes						usbuhci	Microsoft USB Universal Host Controller Miniport Driver c:\windows\system32\drivers\usbuhci.sys Kernel Driver Yes Manual Running OK Normal No Yes			
simbad	Simbad Not Available No Disabled Stopped OK Normal No No						vgasave	VGA Display Controller. c:\windows\system32\drivers\vga.sys Kernel Driver Yes System Running OK Ignore No Yes			
srv	Srv c:\windows\system32\drivers\srv.sys File System Driver Yes Manual Running OK Normal No Yes						viaide	ViaIde Not Available No Disabled Stopped OK Normal No No			
swenum	Software Bus Driver c:\windows\system32\drivers\swenum.sys Kernel Driver Yes Manual Running OK Normal No Yes						volsnap	Storage volumes c:\windows\system32\drivers\volsnap.sys Kernel Driver Yes Boot Running OK Normal No Yes			

wanarp	Remote Access IP ARP Driver					
	c:\windows\system32\drivers\wanarp.sys					
	Kernel Driver	Yes	Manual			
	Running	OK	Normal	No	Yes	

wdica	WDICA	Not Available		Kernel Driver		
	No	Manual	Stopped	OK		
	Ignore	No	No			

wlbs	Network Load Balancing					
	c:\windows\system32\drivers\wlbs.sys					
	Kernel Driver	No	Manual			
	Stopped	OK	Normal	No	No	

[Signed Drivers]

Device Name	Signed	Device Class
Driver Version		Driver Date
Manufacturer		INF Name Driver Name
Device ID		

Not Available	Not Available	Not Available
Not Available	Not Available	Not

Available	Not Available	Not Available
HTREE\ROOT\0		

ACPI IA64-based PC	No	COMPUTER
5.2.3790.0 10/1/2002 (Standard computers)		
hal.inf	Not Available	
ROOT\ACPI_HAL\0000		

Microsoft ACPI-Compliant System	No	
SYSTEM 5.2.3790.0 10/1/2002 Microsoft		
acpi.inf	Not Available	
ACPI_HAL\PNP0C08\0		

Processor	No	PROCESSOR
10/1/2002 (Standard processor types)		5.2.3790.0
cpu.inf	Not Available	
ACPI\GENUINEINTEL_-		

_IA64_FAMILY_31_MODEL_1\0		
Processor	No	PROCESSOR
10/1/2002 (Standard processor types)		5.2.3790.0
cpu.inf	Not Available	
ACPI\GENUINEINTEL_-		

_IA64_FAMILY_31_MODEL_1\1		
Processor	No	PROCESSOR
10/1/2002 (Standard processor types)		5.2.3790.0
cpu.inf	Not Available	
ACPI\GENUINEINTEL_-		

_IA64_FAMILY_31_MODEL_1\2		
Processor	No	PROCESSOR
10/1/2002 (Standard processor types)		5.2.3790.0
cpu.inf	Not Available	
ACPI\GENUINEINTEL_-		

_IA64_FAMILY_31_MODEL_1\3		
PCI bus	No	SYSTEM
5.2.3790.0 10/1/2002 (Standard system devices)		machine.inf
Not Available		ACPI\PNP0A03\0

Intel(r) 82801DB/DBM USB Universal Host Controller - 24C2	No	USB
5.2.3790.0 10/1/2002 Intel		
usbport.inf	Not Available	
PCI\VEN_8086&DEV_24C2&SUBSYS_000000		

00&REV_01\3&267A616A&0&E8		
USB Root Hub	No	USB
5.2.3790.0 10/1/2002 (Standard USB Host Controller)		
usbport.inf	Not Available	
USB\ROOT_HUB\4&74C8736&0		

Intel(r) 82801DB/DBM USB Universal Host Controller - 24C4	No	USB
5.2.3790.0 10/1/2002 Intel		
usbport.inf	Not Available	
PCI\VEN_8086&DEV_24C4&SUBSYS_000000		

00&REV_01\3&267A616A&0&E9		
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USB Root Hub	No	USB
5.2.3790.0 10/1/2002 (Standard USB Host Controller)		
usbport.inf	Not Available	
USB\ROOT_HUB\4&84AD92A&0		

USB Composite Device	No	USB
5.2.3790.0 10/1/2002 (Standard USB Host Controller)		
usb.inf	Not Available	
USB\VID_0666&PID_0101\5&ECD0C86&0&2		

USB Human Interface Device	No	HIDCLASS
5.2.3790.0 10/1/2002 (Standard system devices)		
input.inf	Not Available	
USB\VID_0666&PID_0101&MI_00\6&79B7249		

&0&0000		
HID Keyboard Device	No	KEYBOARD
5.2.3790.0 10/1/2002 (Standard keyboards)		
keyboard.inf	Not Available	
HID\VID_0666&PID_0101&MI_00\7&D37C6E		

3&0&0000		
USB Human Interface Device	No	HIDCLASS
5.2.3790.0 10/1/2002 (Standard system devices)		
input.inf	Not Available	
USB\VID_0666&PID_0101&MI_01\6&79B7249		

&0&0001		
HID-compliant mouse	No	MOUSE
5.2.3790.0 10/1/2002 Microsoft		
mshmouse.inf	Not Available	
HID\VID_0666&PID_0101&MI_01\7&5F8555B		

&0&0000		
Intel(R) 82801DB PCI Bridge - 244E	No	
SYSTEM 5.2.3790.0 10/1/2002 Intel		
machine.inf	Not Available	
PCI\VEN_8086&DEV_244E&SUBSYS_000000		

00&REV_81\3&267A616A&0&F0		
Intel(R) PRO/1000 MT Network Connection	No	NET
6.3.6.31 10/1/2002 Intel		
nete1000.inf	Not Available	
PCI\VEN_8086&DEV_100E&SUBSYS_340280		

86&REV_02\4&2AF9ED5&0&00F0		
RAGE XL PCI Family (Microsoft Corporation)	No	
DISPLAY 5.10.2600.6014 8/8/2001 ATI		
Technologies Inc.	atiixpad.inf	Not Available
PCI\VEN_1002&DEV_4752&SUBSYS_800810		

02&REV_27\4&2AF9ED5&0&08F0		
Default Monitor	No	MONITOR
5.1.2001.0 6/6/2001 (Standard monitor types)		
monitor.inf	Not Available	
DISPLAY\DEFAULT_MONITOR\5&34C5FC05		

&0&80000000&01&01		
Intel(r) 82801DB LPC Interface Controller - 24C0	No	
SYSTEM 5.2.3790.0 10/1/2002 Intel		
machine.inf	Not Available	
PCI\VEN_8086&DEV_24C0&SUBSYS_000000		

00&REV_01\3&267A616A&0&F8		
Intel(r) 82801DB Ultra ATA Storage Controller-24CB	No	
HDC 5.2.3790.0 10/1/2002 Intel		
mshdc.inf	Not Available	
PCI\VEN_8086&DEV_24CB&SUBSYS_000000		

00&REV_01\3&267A616A&0&F9		
Primary IDE Channel	No	HDC
5.2.3790.0 10/1/2002 (Standard IDE ATA/ATAPI controllers)		
mshdc.inf	Not Available	
PCI\IDE\IDECHANNEL\4&4C2EC9A&0&0		

CD-ROM Drive	No	CDROM
5.2.3790.0 10/1/2002 (Standard CD-ROM drives)		
cdrom.inf	Not Available	
IDE\CDROM\MATSHITA_DVD-ROM_SR-		

8176_____MZ31_____5&21C515B&0&0.0.0		
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High-Capacity Floppy Disk Drive No
 FLOPPYDISK 5.2.3790.0 10/1/2002
 (Standard floppy disk drives) floppydisk.inf
 Not Available
 IDE\DISKMATSHITA_LS-
 120/240_00_H050_32323132484D
 3041313037342020202020202020
 Secondary IDE Channel No HDC
 5.2.3790.0 10/1/2002 (Standard IDE
 ATA/ATAPI controllers) mshdc.inf Not Available
 PCIIDE\IDECHANNEL\4&4C2EC9A&0&1

Generic Bus No SYSTEM 5.2.3790.0
 10/1/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0A05\3&267A616A&0

Motherboard resources No SYSTEM
 5.2.3790.0 10/1/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0C02\1

Programmable interrupt controller No
 SYSTEM 5.2.3790.0 10/1/2002 (Standard
 system devices) machine.inf Not Available
 ACPI\PNP0000\4&1B47357E&0

Direct memory access controller No SYSTEM
 5.2.3790.0 10/1/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0200\4&1B47357E&0

System timer No SYSTEM 5.2.3790.0
 10/1/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0100\4&1B47357E&0

System CMOS/real time clock No SYSTEM
 5.2.3790.0 10/1/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0B00\4&1B47357E&0

System speaker No SYSTEM 5.2.3790.0
 10/1/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0800\4&1B47357E&0

Motherboard resources No SYSTEM
 5.2.3790.0 10/1/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0C02\4

Standard floppy disk controller No FDC
 5.2.3790.0 10/1/2002 (Standard floppy disk
 controllers) fdc.inf Not Available
 ACPI\PNP0700\4&1B47357E&0

Communications Port No PORTS 5.2.3790.0
 10/1/2002 (Standard port types) msports.inf
 Not Available ACPI\PNP0501\1

Communications Port No PORTS 5.2.3790.0
 10/1/2002 (Standard port types) msports.inf
 Not Available ACPI\PNP0501\2

Unsupported Printer Port No PORTS
 5.2.3790.0 10/1/2002 (Standard port types)
 msports.inf Not Available
 ACPI\PNP0400\4&1B47357E&0

PCI bus No SYSTEM 5.2.3790.0 10/1/2002
 (Standard system devices) machine.inf
 Not Available ACPI\PNP0A03\1

Intel(r) 82870 I/OxAPIC Interrupt Controller No
 SYSTEM 5.2.3790.0 10/1/2002 Intel
 machine.inf Not Available
 PCI\VEN_8086&DEV_1461&SUBSYS_000000
 00&REV_03\3&13C0B0C5&0&E0

Intel(r) 82870 Hub Interface to PCI Bridges No
 SYSTEM 5.2.3790.0 10/1/2002 Intel
 machine.inf Not Available

PCI\VEN_8086&DEV_1460&SUBSYS_000000
 00&REV_03\3&13C0B0C5&0&E8

Intel(r) 82870 Hot Plug controller No
 SYSTEM 5.2.3790.0 10/1/2002 Intel
 machine.inf Not Available
 PCI\VEN_8086&DEV_1462&SUBSYS_03B080
 86&REV_03\4&BB4EDA2&0&F8E8

Intel(r) 82870 I/OxAPIC Interrupt Controller No
 SYSTEM 5.2.3790.0 10/1/2002 Intel
 machine.inf Not Available
 PCI\VEN_8086&DEV_1461&SUBSYS_000000
 00&REV_03\3&13C0B0C5&0&F0

Intel(r) 82870 Hub Interface to PCI Bridges No
 SYSTEM 5.2.3790.0 10/1/2002 Intel
 machine.inf Not Available
 PCI\VEN_8086&DEV_1460&SUBSYS_000000
 00&REV_03\3&13C0B0C5&0&F8

QLogic QLA2200 PCI Fibre Channel Adapter No
 SCSIADAPTER 5.2.3790.0 10/1/2002
 QLogic pnpscsi.inf Not Available
 PCI\VEN_1077&DEV_2200&SUBSYS_000210
 77&REV_05\4&31EC0629&0&08F8

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 1_CLAR18&REV_F266\5&2A8E6E83&0&000

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 1_CLAR18&REV_F266\5&2A8E6E83&0&010

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 1_CLAR18&REV_F266\5&2A8E6E83&0&020

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 1_CLAR18&REV_F266\5&2A8E6E83&0&030

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 1_CLAR18&REV_F266\5&2A8E6E83&0&040

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 1_CLAR18&REV_F266\5&2A8E6E83&0&050

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 1_CLAR18&REV_F266\5&2A8E6E83&0&060

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 1_CLAR18&REV_F266\5&2A8E6E83&0&070

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 1_CLAR18&REV_F266\5&2A8E6E83&0&080

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available

SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 1_CLAR18&REV_F2665&2A8E6E83&0&090
 LSI Logic PCI-X Ultra320 SCSI Host Adapter No
 SCSIADAPTER 5.2.3790.0 10/1/2002 LSI
 Logic Inc. pnpscsi.inf Not Available
 PCI\VEN_1000&DEV_0030&SUBSYS_340280
 86&REV_07\4&31EC0629&0&10F8
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST33675
 2LC&REV_0003\5&30297B79&0&000
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST33675
 2LC&REV_0003\5&30297B79&0&010
 LSI Logic PCI-X Ultra320 SCSI Host Adapter No
 SCSIADAPTER 5.2.3790.0 10/1/2002 LSI
 Logic Inc. pnpscsi.inf Not Available
 PCI\VEN_1000&DEV_0030&SUBSYS_340280
 86&REV_07\4&31EC0629&0&11F8
 Intel(r) 82870 Hot Plug controller No
 SYSTEM 5.2.3790.0 10/1/2002 Intel
 machine.inf Not Available
 PCI\VEN_8086&DEV_1462&SUBSYS_03B080
 86&REV_03\4&31EC0629&0&F8F8
 PCI bus No SYSTEM 5.2.3790.0 10/1/2002
 (Standard system devices) machine.inf
 Not Available ACPI\PNP0A03\3
 Intel(r) 82870 I/OxAPIC Interrupt Controller No
 SYSTEM 5.2.3790.0 10/1/2002 Intel
 machine.inf Not Available
 PCI\VEN_8086&DEV_1461&SUBSYS_000000
 00&REV_03\3&29E81982&0&E0
 Intel(r) 82870 Hub Interface to PCI Bridges No
 SYSTEM 5.2.3790.0 10/1/2002 Intel
 machine.inf Not Available
 PCI\VEN_8086&DEV_1460&SUBSYS_000000
 00&REV_03\3&29E81982&0&E8
 QLogic QLA23xx PCI Fibre Channel Adapter No
 SCSIADAPTER 8.2.1.0 2/3/2003
 QLogic oem0.inf Not Available
 PCI\VEN_1077&DEV_2312&SUBSYS_010110
 77&REV_02\4&1F0F3F57&0&08E8
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&000
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&010
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&020
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&030
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&040

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&050
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&060
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&070
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&080
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&090
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&0A0
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&0B0
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&0C0
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&345FCCA3&0&0D0
 Qlogic processor device No SYSTEM
 5.2.3790.0 10/1/2002 QLOGIC scsudev.inf Not
 Available
 SCSI\PROCESSOR&VEN_QLOGIC&PROD_P
 SEUDO_DEVICE&REV_5&345FCCA3&0&07F0
 QLogic QLA23xx PCI Fibre Channel Adapter No
 SCSIADAPTER 8.2.1.0 2/3/2003
 QLogic oem0.inf Not Available
 PCI\VEN_1077&DEV_2312&SUBSYS_010110
 77&REV_02\4&1F0F3F57&0&09E8
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&1BC6A4F9&0&000
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_0003\5&1BC6A4F9&0&010
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
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 2FC&REV_0003\5&1BC6A4F9&0&020

Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_00035&1BC6A4F9&0&030
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_00035&1BC6A4F9&0&040
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_00035&1BC6A4F9&0&050
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_00035&1BC6A4F9&0&060
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_00035&1BC6A4F9&0&070
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_00035&1BC6A4F9&0&080
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_00035&1BC6A4F9&0&090
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_00035&1BC6A4F9&0&0A0
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_00035&1BC6A4F9&0&0B0
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
 SCSI\DISK&VEN_SEAGATE&PROD_ST31845
 2FC&REV_00035&1BC6A4F9&0&0C0
 Disk drive No DISKDRIVE 5.2.3790.0
 10/1/2002 (Standard disk drives) disk.inf Not
 Available
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QLogic oem0.inf Not Available
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10/1/2002 Microsoft volume.infNot Available
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10/1/2002 Microsoft volume.infNot Available
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Generic volume No VOLUME 5.2.3790.0
10/1/2002 Microsoft volume.infNot Available
STORAGE\VOLUME\1&3735C57B&0&LDM#
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10/1/2002 Microsoft volume.infNot Available
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Volume Manager No SYSTEM 5.2.3790.0
10/1/2002 (Standard system devices)
machine.inf Not Available
ROOT\FTDISK\0000

Generic volume No VOLUME 5.2.3790.0
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adpu320 Not Available LEGACYDRIVER Not Available
Available Not Available Not Available Not Available
Available Not Available

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AFD Networking Support Environment Not Available
LEGACYDRIVER Not Available Not Available
Available Not Available Not Available Not Available
Available ROOT\LEGACY_AFD\0000

Beep Not Available LEGACYDRIVER Not Available
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ROOT\LEGACY_BEEP\0000

CRC Disk Filter Driver Not Available
LEGACYDRIVER Not Available Not Available
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Available ROOT\LEGACY_CRCDISK\0000

dmboot Not Available LEGACYDRIVER Not Available
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ROOT\LEGACY_DMBOOT\0000

dmload Not Available LEGACYDRIVER Not Available
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ROOT\LEGACY_DMLOAD\0000

Fips Not Available LEGACYDRIVER Not Available
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Available Not Available

ROOT\LEGACY_FIPS\0000

Generic Packet Classifier Not Available
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Available ROOT\LEGACY_GPC\0000

IPSEC driver Not Available
LEGACYDRIVER Not Available Not Available
Available Not Available Not Available Not Available
Available ROOT\LEGACY_IPSEC\0000

ksecdd Not Available LEGACYDRIVER Not Available
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ROOT\LEGACY_KSECDD\0000

mountmgr Not Available LEGACYDRIVER Not Available
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ROOT\LEGACY_MOUNTMGR\0000

NDIS System Driver Not Available
LEGACYDRIVER Not Available Not Available
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Available ROOT\LEGACY_NDIS\0000

Remote Access NDIS TAPI Driver Not Available
LEGACYDRIVER Not Available Not Available
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Available ROOT\LEGACY_NDIS\0000

NDIS Usermode I/O Protocol Not Available
LEGACYDRIVER Not Available Not Available
Available Not Available Not Available Not Available
Available ROOT\LEGACY_NDISUIO\0000

NDProxy Not Available LEGACYDRIVER Not Available
Available Not Available Not Available Not Available

Available	Not Available		
ROOT\LEGACY_NDPROXY\0000			
NetBios over Tcpip	Not Available		
	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_NETBT\0000		
Null	Not Available	LEGACYDRIVER	Not
Available	Not Available	Not Available	Not
Available	Not Available		
ROOT\LEGACY_NULL\0000			
Partition Manager	Not Available		
	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_PARTMGR\0000		
PCIide	Not Available	LEGACYDRIVER	Not
Available	Not Available	Not Available	Not
Available	Not Available		
ROOT\LEGACY_PCIIDE\0000			
Remote Access Auto Connection Driver	Not Available		
	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_RASACD\0000		
RDPcdd	Not Available	LEGACYDRIVER	Not
Available	Not Available	Not Available	Not
Available	Not Available		
ROOT\LEGACY_RDPcdd\0000			
RDPWD	Not Available	LEGACYDRIVER	Not
Available	Not Available	Not Available	Not
Available	Not Available		
ROOT\LEGACY_RDPWD\0000			
TCP/IP Protocol Driver	Not Available		
	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_TCPIP\0000		
TDTCP	Not Available	LEGACYDRIVER	Not
Available	Not Available	Not Available	Not
Available	Not Available		
ROOT\LEGACY_TDTCP\0000			
VGA Display Controller.	Not Available		
	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_VGASAVE\0000		
volsnap	Not Available	LEGACYDRIVER	Not
Available	Not Available	Not Available	Not
Available	Not Available		
ROOT\LEGACY_VOLSNAP\0000			
Remote Access IP ARP Driver	Not Available		
	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_WANARP\0000		
Audio Codecs	No	MEDIA	5.2.3790.0
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	wave.inf	Not Available	
ROOT\MEDIA\MS_MMCM			
Legacy Audio Drivers	No	MEDIA	5.2.3790.0
10/1/2002 (Standard system devices)			
	wave.inf	Not Available	
ROOT\MEDIA\MS_MMDRV			
Media Control Devices	No	MEDIA	
5.2.3790.0 10/1/2002 (Standard system devices)			
	wave.inf	Not Available	
ROOT\MEDIA\MS_MMMCI			
Legacy Video Capture Devices	No	MEDIA	
5.2.3790.0 10/1/2002 (Standard system devices)			
	wave.inf	Not Available	
ROOT\MEDIA\MS_MMVCD			
Video Codecs	No	MEDIA	5.2.3790.0
10/1/2002 (Standard system devices)			
	wave.inf	Not Available	
ROOT\MEDIA\MS_MMVID			

WAN Miniport (L2TP)	No	NET
5.2.3790.0 10/1/2002 Microsoft netrasa.inf Not		
Available	ROOT\MS_L2TPMINIPORT\0000	
WAN Miniport (IP)	No	NET
10/1/2002 Microsoft netrasa.inf Not Available		
ROOT\MS_NDISWANIP\0000		
WAN Miniport (PPPOE)	No	NET
5.2.3790.0 10/1/2002 Microsoft netrasa.inf Not		
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WAN Miniport (PPTP)	No	NET
5.2.3790.0 10/1/2002 Microsoft netrasa.inf Not		
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Direct Parallel	No	NET
10/1/2002 Microsoft netrasa.inf Not Available		
ROOT\MS_PTMINIPORT\0000		
Terminal Server Device Redirector	No	
SYSTEM 5.2.3790.0 10/1/2002 (Standard		
system devices)	machine.inf	Not Available
ROOT\RDPDR\0000		
Terminal Server Keyboard Driver	No	
SYSTEM 5.2.3790.0 10/1/2002 (Standard		
system devices)	machine.inf	Not Available
ROOT\RDP_KBD\0000		
Terminal Server Mouse Driver	No	SYSTEM
5.2.3790.0 10/1/2002 (Standard system devices)		
	machine.inf	Not Available
ROOT\RDP_MOU\0000		
Plug and Play Software Device Enumerator	No	
SYSTEM 5.2.3790.0 10/1/2002 (Standard		
system devices)	machine.inf	Not Available
ROOT\SYSTEM\0000		

[Environment Variables]

Variable	Value	User Name
CLASSPATH	.;D:\SQLLIB\java\db2java.zip;D:\SQLLIB\java\bd2jcc.jar;D:\SQLLIB\java\runtime.zip;D:\SQLLIB\java\sqlj.zip;D:\SQLLIB\bin <SYSTEM>	
ClusterLogC:	WINDOWS\Cluster\cluster.log	
	<SYSTEM>	
ComSpec	%SystemRoot%\system32\cmd.exe	
	<SYSTEM>	
DB2INSTANCE	DB2	<SYSTEM>
DB2TEMPDIR	D:\SQLLIB\	<SYSTEM>
INCLUDE	D:\Tools\MSC64\Include;D:\Tools\MSC64\Include\Win64\crt;D:\Tools\MSC64\Include\Win64\crt\sys;D:\Tools\MSC64\Include\Win64\mf;D:\Tools\MSC64\Include\Win64\atl;D:\SQLLIB\INCLUDE;D:\SQLLIB\LIB <SYSTEM>	
LIB	D:\SQLLIB\lib;D:\Tools\MSC64\Lib\IA64;D:\Tools\MSC64\Lib\IA64\mf;D:\SQLLIB\LIB <SYSTEM>	
NUMBER_OF_PROCESSORS	4	<SYSTEM>
OS	Windows_NT	<SYSTEM>
Path	D:\Tools\bin;D:\Tools\Perl\bin;D:\Tools\cygwin\bin;D:\Tools\MSC64\Bin\Win64;D:\Tools\MSC64\Bin;D:\Tools\MSC64\Bin\WinNT;%SystemRoot%\system32;%SystemRoot%;%SystemRoot%\system32\wbem;D:\SQLLIB\BIN;D:\SQLLIB\FUNCTION;D:\SQLLIB\SAMPLES\REPL <SYSTEM>	
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH <SYSTEM>	

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<SYSTEM>
PROCESSOR_IDENTIFIER        ia64 Family 31 Model 1
Stepping 5, GenuineIntel    <SYSTEM>
PROCESSOR_LEVEL             31      <SYSTEM>

PROCESSOR_REVISION          0105    <SYSTEM>

TEMP      %SystemRoot%\TEMP      <SYSTEM>

TMP       %SystemRoot%\TEMP      <SYSTEM>

windir    %SystemRoot%          <SYSTEM>
TEMP      %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\SYSTEM
TMP       %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\SYSTEM
TEMP      %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\LOCAL SERVICE
TMP       %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\LOCAL SERVICE
TEMP      %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\NETWORK SERVICE
TMP       %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\NETWORK SERVICE
DB2INSTANCE DB2TPCHKMCHAN-
TIGER2\db2tpch
TEMP      %USERPROFILE%\Local Settings\Temp
KMCHAN-TIGER2\db2tpch
TMP       %USERPROFILE%\Local Settings\Temp
KMCHAN-TIGER2\db2tpch
TEMP      %USERPROFILE%\Local Settings\Temp
KMCHAN-TIGER2\db2qual
TMP       %USERPROFILE%\Local Settings\Temp
KMCHAN-TIGER2\db2qual

```

[Print Jobs]

Document	Size	Owner	Notify	Status	Time
Submitted	Start Time	Until Time	Elapsed Time		
Pages Printed		Job ID	Priority		
Parameters	Driver	Print Processor			Host
Print Queue		Data Type	Name		

[Network Connections]

Local Name	Remote Name	Type
Status	User Name	

[Running Tasks]

Name	Path	Process ID	Priority	Min Working Set
Set	Max Working Set	Start Time	Version	Size
File Date				
system idle process	Not Available	0	0	
Available	Not Available	Not Available	Not	
Available	Not Available	Not Available	Not	
system	Not Available	4	8	0
	2826240	Not Available	Not Available	
	Not Available	Not Available		
smss.exe	Not Available	432	11	
	409600	2826240	6/24/2003 9:40 PM	Not
Available	Not Available	Not Available		
csrss.exe	Not Available	484	13	Not
Available	Not Available	6/24/2003 9:40 PM	Not	
Available	Not Available	Not Available		
winlogon.exe	c:\windows\system32\winlogon.exe			
	508	13	409600	2826240
	6/24/2003 9:40 PM	5.2.3790.0		

```

(srv03_rtm.030324-2048) 618.00 KB (632,832 bytes)
3/25/2003 5:00 AM
services.exe c:\windows\system32\services.exe
552 9 409600 2826240
6/24/2003 9:40 PM 5.2.3790.0
(srv03_rtm.030324-2048) 286.00 KB (292,864 bytes)
3/25/2003 5:00 AM
lsass.exe c:\windows\system32\lsass.exe 564 9
409600 2826240 6/24/2003 9:40 PM
5.2.3790.0 (srv03_rtm.030324-2048) 15.00
KB (15,360 bytes) 3/25/2003 5:00 AM
svchost.exe c:\windows\system32\svchost.exe
712 8 409600 2826240
6/24/2003 9:40 PM 5.2.3790.0
(srv03_rtm.030324-2048) 32.50 KB (33,280 bytes)
3/25/2003 5:00 AM
svchost.exe c:\windows\system32\svchost.exe
780 8 409600 2826240
6/24/2003 9:40 PM 5.2.3790.0
(srv03_rtm.030324-2048) 32.50 KB (33,280 bytes)
3/25/2003 5:00 AM
svchost.exe Not Available 916 8
Not Available Not Available
6/24/2003 9:40 PM Not Available Not
Available Not Available
csrss.exe Not Available 932 13 Not
Available Not Available 6/24/2003 9:40 PM Not
Available Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe
960 13 409600 2826240
6/24/2003 9:40 PM 5.2.3790.0
(srv03_rtm.030324-2048) 618.00 KB (632,832 bytes)
3/25/2003 5:00 AM
svchost.exe Not Available 1088 8
Not Available Not Available
6/24/2003 9:40 PM Not Available Not
Available Not Available
svchost.exe c:\windows\system32\svchost.exe
1120 8 409600 2826240
6/24/2003 9:40 PM 5.2.3790.0
(srv03_rtm.030324-2048) 32.50 KB (33,280 bytes)
3/25/2003 5:00 AM
rdpclip.exe c:\windows\system32\rdpclip.exe 1244 8
409600 2826240 6/24/2003 9:40 PM
5.2.3790.0 (srv03_rtm.030324-2048)
156.00 KB (159,744 bytes) 6/11/2003 5:01
PM
explorer.exe c:\windows\explorer.exe 1312
8 409600 2826240 6/24/2003 9:40
PM 6.00.3790.0 (srv03_rtm.030324-2048) 1.63
MB (1,704,960 bytes) 3/25/2003 5:00 AM
msdtc.exe Not Available 1348 8 Not
Available Not Available 6/24/2003 9:40 PM Not
Available Not Available Not Available
svchost.exe c:\windows\system32\svchost.exe
1524 8 409600 2826240
6/24/2003 9:41 PM 5.2.3790.0
(srv03_rtm.030324-2048) 32.50 KB (33,280 bytes)
3/25/2003 5:00 AM
wzqkpick.exe c:\program files
(x86)\winzip\wzqkpick.exe 1708 8
409600 2826240 6/24/2003 9:41 PM 1.0
(32-bit) 116.00 KB (118,784 bytes) 6/13/2003 2:34
PM
dmadmin.exe c:\windows\system32\dmadmin.exe
1752 8 409600 2826240
6/24/2003 9:41 PM 5.2.3790.0
(srv03_rtm.030324-2048) 643.50 KB (658,944 bytes)
3/25/2003 5:00 AM

```

wmiprvse.exe	Not Available	1580	8
	Not Available	Not Available	
	6/24/2003 9:41 PM	Not Available	Not
Available	Not Available		
mmc.exe	c:\windows\system32\mmc.exe	352	8
	409600 2826240	6/25/2003 12:32 PM	
	5.2.3790.0 (srv03_rtm.030324-2048)		2.48
MB (2,598,912 bytes)	3/25/2003 5:00 AM		
vds.exe	c:\windows\system32\vds.exe	1176	8
	409600 2826240	6/25/2003 12:36 PM	
	5.2.3790.0 (srv03_rtm.030324-2048)		
	543.50 KB (556,544 bytes)	3/25/2003 5:00	
AM			
logon.scr	Not Available	4252	4
Available	Not Available	6/25/2003 12:53 PM	Not
Available	Not Available	Not Available	
cmd.exe	c:\windows\system32\cmd.exe	4664	8
	409600 2826240	6/25/2003 1:43 PM	
	5.2.3790.0 (srv03_rtm.030324-2048)		
	493.50 KB (505,344 bytes)	3/25/2003 5:00	
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	Not Available	Not Available	
	6/25/2003 1:43 PM	Not Available	Not
Available	Not Available		
db2syscs.exe	Not Available	4080	8
	Not Available	Not Available	
	6/25/2003 2:20 PM	Not Available	Not
Available	Not Available		
db2mh.exe	d:\sqlib\bin\db2mh.exe	1944	8
	409600 2826240	6/25/2003 2:20 PM	
	8.1.3.72 20.06 KB (20,544 bytes)		
	5/30/2003 5:23 PM		
db2syscs.exe	Not Available	4632	8
	Not Available	Not Available	
	6/25/2003 2:20 PM	Not Available	Not
Available	Not Available		
db2mh.exe	d:\sqlib\bin\db2mh.exe	4304	8
	409600 2826240	6/25/2003 2:20 PM	
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	5/30/2003 5:23 PM		
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	8.1.3.72 1.57 MB (1,641,472 bytes)		
	5/30/2003 2:54 PM		
helpctr.exe	c:\windows\pchealth\helpctr\binaries\helpctr.exe		
	2492 8 409600 2826240		
	6/25/2003 3:23 PM	5.2.3790.0	
(srv03_rtm.030324-2048)		1.97 MB (2,066,432 bytes)	
	6/11/2003 5:03 PM		
wmiprvse.exe	Not Available	2772	8
	Not Available	Not Available	
	6/25/2003 3:23 PM	Not Available	Not
Available	Not Available		
helpsvc.exe	c:\windows\pchealth\helpctr\binaries\helpsvc.exe		
	5304 8 409600 2826240		
	6/25/2003 3:23 PM	5.2.3790.0	
(srv03_rtm.030324-2048)		2.18 MB (2,289,152 bytes)	
	6/11/2003 5:03 PM		

[Loaded Modules]

Name	Version	Size	File Date	Manufacturer
winlogon	5.2.3790.0 (srv03_rtm.030324-2048)	618.00 KB (632,832 bytes)	3/25/2003 5:00	Microsoft Corporation
AM	c:\windows\system32\winlogon.exe			

ntdll	5.2.3790.0 (srv03_rtm.030324-2048)	1.45
MB (1,524,224 bytes)	3/25/2003 5:00 AM	Microsoft Corporation
c:\windows\system32\ntdll.dll		
kernel32	5.2.3790.0 (srv03_rtm.030324-2048)	1.76
MB (1,850,368 bytes)	3/25/2003 5:00 AM	Microsoft Corporation
c:\windows\system32\kernel32.dll		
msvcrt	7.0.3790.0 (srv03_rtm.030324-2048)	
873.50 KB (894,464 bytes)	3/25/2003 5:00	AM
Microsoft Corporation		
c:\windows\system32\msvcrt.dll		
advapi32	5.2.3790.0 (srv03_rtm.030324-2048)	1.32
MB (1,383,424 bytes)	3/25/2003 5:00 AM	Microsoft Corporation
c:\windows\system32\advapi32.dll		
rpcrt4	5.2.3790.0 (srv03_rtm.030324-2048)	2.03
MB (2,127,872 bytes)	3/25/2003 5:00 AM	Microsoft Corporation
c:\windows\system32\rpcrt4.dll		
user32	5.2.3790.0 (srv03_rtm.030324-2048)	1.31
MB (1,372,672 bytes)	3/25/2003 5:00 AM	Microsoft Corporation
c:\windows\system32\user32.dll		
gdi32	5.2.3790.0 (srv03_rtm.030324-2048)	
783.00 KB (801,792 bytes)	3/25/2003 5:00	AM
Microsoft Corporation		
c:\windows\system32\gdi32.dll		
userenv	5.2.3790.0 (srv03_rtm.030324-2048)	1.46
MB (1,536,000 bytes)	3/25/2003 5:00 AM	Microsoft Corporation
c:\windows\system32\userenv.dll		
nddeapi	5.2.3790.0 (srv03_rtm.030324-2048)	39.50
KB (40,448 bytes)	3/25/2003 5:00 AM	Microsoft Corporation
c:\windows\system32\nddeapi.dll		
crypt32	5.131.3790.0 (srv03_rtm.030324-2048)	1.50
MB (1,576,448 bytes)	3/25/2003 5:00 AM	Microsoft Corporation
c:\windows\system32\crypt32.dll		
msasn1	5.2.3790.0 (srv03_rtm.030324-2048)	
153.50 KB (157,184 bytes)	3/25/2003 5:00	AM
Microsoft Corporation		
c:\windows\system32\msasn1.dll		
secur32	5.2.3790.0 (srv03_rtm.030324-2048)	
166.50 KB (170,496 bytes)	3/25/2003 5:00	AM
Microsoft Corporation		
c:\windows\system32\secur32.dll		
winsta	5.2.3790.0 (srv03_rtm.030324-2048)	
138.50 KB (141,824 bytes)	3/25/2003 5:00	AM
Microsoft Corporation		
c:\windows\system32\winsta.dll		
netapi32	5.2.3790.0 (srv03_rtm.030324-2048)	
832.00 KB (851,968 bytes)	3/25/2003 5:00	AM
Microsoft Corporation		
c:\windows\system32\netapi32.dll		
profmap	5.2.3790.0 (srv03_rtm.030324-2048)	55.50
KB (56,832 bytes)	3/25/2003 5:00 AM	Microsoft Corporation
c:\windows\system32\profmap.dll		
regapi	5.2.3790.0 (srv03_rtm.030324-2048)	
124.00 KB (126,976 bytes)	3/25/2003 5:00	AM
Microsoft Corporation		
c:\windows\system32\regapi.dll		
ws2_32	5.2.3790.0 (srv03_rtm.030324-2048)	
228.50 KB (233,984 bytes)	3/25/2003 5:00	AM
Microsoft Corporation		
c:\windows\system32\ws2_32.dll		
ws2help	5.2.3790.0 (srv03_rtm.030324-2048)	49.50
KB (50,688 bytes)	3/25/2003 5:00 AM	Microsoft Corporation
c:\windows\system32\ws2help.dll		
msgina	5.2.3790.0 (srv03_rtm.030324-2048)	1.35
MB (1,417,728 bytes)	3/25/2003 5:00 AM	Microsoft Corporation
c:\windows\system32\msgina.dll		

shsvcs 6.00.3790.0 (srv03_rtm.030324-2048)
321.50 KB (329,216 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\shsvcs.dll

shlwapi 6.00.3790.0 (srv03_rtm.030324-2048)
722.00 KB (739,328 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\shlwapi.dll

sfc 5.2.3790.0 (srv03_rtm.030324-2048) 7.50
KB (7,680 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\sfc.dll

sfc_os 5.2.3790.0 (srv03_rtm.030324-2048)
257.00 KB (263,168 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\sfc_os.dll

wintrust 5.131.3790.0 (srv03_rtm.030324-2048)
451.50 KB (462,336 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\wintrust.dll

ole32 5.2.3790.0 (srv03_rtm.030324-2048) 3.38
MB (3,549,184 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\ole32.dll

imagehlp 5.2.3790.0 (srv03_rtm.030324-2048)
128.50 KB (131,584 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\imagehlp.dll

comctl32 6.0 (sr v03_rtm.030324-2048) 2.18 MB
(2,285,056 bytes) 6/11/2003 9:48 AM Microsoft
Corporation
c:\windows\winsxs\xia64_microsoft.windows.com
mon-controls_6595b64144ccf1df_6.0.100.0_x-
ww_b3722bab\comctl32.dll

version 5.2.3790.0 (srv03_rtm.030324-2048) 44.00
KB (45,056 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\version.dll

winscard 5.2.3790.0 (srv03_rtm.030324-2048)
291.50 KB (298,496 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\winscard.dll

wtsapi32 5.2.3790.0 (srv03_rtm.030324-2048) 47.50
KB (48,640 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\wtsapi32.dll

sxs 5.2.3790.0 (srv03_rtm.030324-2048) 1.77
MB (1,860,608 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\sxs.dll

winmm 5.2.3790.0 (srv03_rtm.030324-2048)
404.00 KB (413,696 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\winmm.dll

shell32 6.00.3790.0 (srv03_rtm.030324-2048) 12.35
MB (12,953,088 bytes) 3/25/2003 5:00 AM
Microsoft Corporation
c:\windows\system32\shell32.dll

setupapi 5.2.3790.0 (srv03_rtm.030324-2048) 1.90
MB (1,991,168 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\setupapi.dll

wldap32 5.2.3790.0 (srv03_rtm.030324-2048)
412.50 KB (422,400 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\wldap32.dll

cscdll 5.2.3790.0 (srv03_rtm.030324-2048)
211.00 KB (216,064 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\cscdll.dll

wlnotify 5.2.3790.0 (srv03_rtm.030324-2048)
218.00 KB (223,232 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\wlnotify.dll

winspool 5.2.3790.0 (srv03_rtm.030324-2048)
399.50 KB (409,088 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\winspool.dr

mpr 5.2.3790.0 (srv03_rtm.030324-2048)
163.00 KB (166,912 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\mpr.dll

comctl32 5.82 (srv03_rtm.030324-2048) 1.55 MB
(1,621,504 bytes) 6/11/2003 9:48 AM Microsoft
Corporation
c:\windows\winsxs\xia64_microsoft.windows.com
mon-controls_6595b64144ccf1df_5.82.0.0_x-
ww_b9c4a0a5\comctl32.dll

uxtheme 6.00.3790.0 (srv03_rtm.030324-2048)
527.50 KB (540,160 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\uxtheme.dll

clbcatq 2001.12.4720.0 (srv03_rtm.030324-2048) 1.23
MB (1,292,800 bytes) 6/11/2003 5:01 PM Microsoft
Corporation c:\windows\system32\clbcatq.dll

oleaut32 5.2.3790.0 3.57 MB (3,739,136 bytes)
3/25/2003 5:00 AM Microsoft Corporation
c:\windows\system32\oleaut32.dll

comres 2001.12.4720.0 (srv03_rtm.030324-2048)
779.50 KB (798,208 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\comres.dll

wbemprox 5.2.3790.0 (srv03_rtm.030324-2048) 46.00
KB (47,104 bytes) 6/11/2003 5:00 PM Microsoft
Corporation
c:\windows\system32\wbem\wbemprox.dll

wbemcomn 5.2.3790.0 (srv03_rtm.030324-2048)
598.50 KB (612,864 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\wbem\wbemcomn.dll

wbemsvc 5.2.3790.0 (srv03_rtm.030324-2048) 62.50
KB (64,000 bytes) 6/11/2003 5:00 PM Microsoft
Corporation
c:\windows\system32\wbem\wbemsvc.dll

fastprox 5.2.3790.0 (srv03_rtm.030324-2048) 1.51
MB (1,580,544 bytes) 6/11/2003 5:00 PM Microsoft
Corporation
c:\windows\system32\wbem\fastprox.dll

msvcpx60 6.10.2240.8 941.50 KB (964,096 bytes)
3/25/2003 5:00 AM Microsoft Corporation
c:\windows\system32\msvcpx60.dll

ntdsapi 5.2.3790.0 (srv03_rtm.030324-2048)
181.50 KB (185,856 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\ntdsapi.dll

dnsapi 5.2.3790.0 (srv03_rtm.030324-2048)
404.00 KB (413,696 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\dnsapi.dll

services 5.2.3790.0 (srv03_rtm.030324-2048)
286.00 KB (292,864 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\services.exe

scserv 5.2.3790.0 (srv03_rtm.030324-2048)
765.00 KB (783,360 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\scserv.dll

authz 5.2.3790.0 (srv03_rtm.030324-2048)
202.50 KB (207,360 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\authz.dll

umpnpgmr 5.2.3790.0 (srv03_rtm.030324-2048)
314.50 KB (322,048 bytes) 3/25/2003 5:00

AM	Microsoft Corporation	c:\windows\system32\umpnpmgr.dll	
ncobjapi	5.2.3790.0 (srv03_rtm.030324-2048)	118.50 KB (121,344 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\ncobjapi.dll	
eventlog	5.2.3790.0 (srv03_rtm.030324-2048)	157.00 KB (160,768 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\eventlog.dll	
psapi	5.2.3790.0 (srv03_rtm.030324-2048)	48.00 KB (49,152 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\psapi.dll	
lsass	5.2.3790.0 (srv03_rtm.030324-2048)	15.00 KB (15,360 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\lsass.exe	
lsasrv	5.2.3790.0 (srv03_rtm.030324-2048)	1.94 MB (2,033,664 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\lsasrv.dll	
samsrv	5.2.3790.0 (srv03_rtm.030324-2048)	1,005.00 KB (1,029,120 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\samsrv.dll	
cryptdll	5.2.3790.0 (srv03_rtm.030324-2048)	61.00 KB (62,464 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\cryptdll.dll	
samlib	5.2.3790.0 (srv03_rtm.030324-2048)	106.00 KB (108,544 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\samlib.dll	
msprivs	5.2.3790.0 (srv03_rtm.030324-2048)	46.00 KB (47,104 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\msprivs.dll	
kerberos	5.2.3790.0 (srv03_rtm.030324-2048)	876.00 KB (897,024 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\kerberos.dll	
msv1_0	5.2.3790.0 (srv03_rtm.030324-2048)	333.50 KB (341,504 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\msv1_0.dll	
netlogon	5.2.3790.0 (srv03_rtm.030324-2048)	936.50 KB (958,976 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\netlogon.dll	
w32time	5.2.3790.0 (srv03_rtm.030324-2048)	540.50 KB (553,472 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\w32time.dll	
iphlpapi	5.2.3790.0 (srv03_rtm.030324-2048)	223.00 KB (228,352 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\iphlpapi.dll	
schannel	5.2.3790.0 (srv03_rtm.030324-2048)	468.50 KB (479,744 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\schannel.dll	
wdigest	5.2.3790.0 (srv03_rtm.030324-2048)	161.50 KB (165,376 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\wdigest.dll	
rsaenh	5.2.3790.0 (srv03_rtm.030324-2048)	371.83 KB (380,752 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\rsaenh.dll	
rassfm	5.2.3790.0 (srv03_rtm.030324-2048)	56.00 KB (57,344 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\rassfm.dll	
kdcsvc	5.2.3790.0 (srv03_rtm.030324-2048)	571.50 KB (585,216 bytes)	3/25/2003 5:00

AM	Microsoft Corporation	c:\windows\system32\kdcsvc.dll	
ntds	5.2.3790.0 (srv03_rtm.030324-2048)	3.82 MB (4,008,448 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\ntds.dll	
ntdsatq	5.2.3790.0 (srv03_rtm.030324-2048)	80.50 KB (82,432 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\ntdsatq.dll	
mswsock	5.2.3790.0 (srv03_rtm.030324-2048)	671.00 KB (687,104 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\mswsock.dll	
esent	5.2.3790.0 (srv03_rtm.030324-2048)	2.48 MB (2,605,056 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\esent.dll	
scecli	5.2.3790.0 (srv03_rtm.030324-2048)	467.50 KB (478,720 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\scecli.dll	
wshtcpip	5.2.3790.0 (srv03_rtm.030324-2048)	38.00 KB (38,912 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\wshtcpip.dll	
pstorsvc	5.2.3790.0 (srv03_rtm.030324-2048)	56.00 KB (57,344 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\pstorsvc.dll	
psbase	5.2.3790.0 (srv03_rtm.030324-2048)	162.50 KB (166,400 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\psbase.dll	
dssenh	5.2.3790.0 (srv03_rtm.030324-2048)	319.33 KB (326,992 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\dssenh.dll	
svchost	5.2.3790.0 (srv03_rtm.030324-2048)	32.50 KB (33,280 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\svchost.exe	
rpcss	5.2.3790.0 (srv03_rtm.030324-2048)	645.00 KB (660,480 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\rpcss.dll	
ntmarta	5.2.3790.0 (srv03_rtm.030324-2048)	343.50 KB (351,744 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\ntmarta.dll	
termsrv	5.2.3790.0 (srv03_rtm.030324-2048)	607.00 KB (621,568 bytes)	6/11/2003 5:01
PM	Microsoft Corporation	c:\windows\system32\termsrv.dll	
icaapi	5.2.3790.0 (srv03_rtm.030324-2048)	27.00 KB (27,648 bytes)	6/11/2003 5:01
AM	Microsoft Corporation	c:\windows\system32\icaapi.dll	
mstlsapi	5.2.3790.0 (srv03_rtm.030324-2048)	311.00 KB (318,464 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\mstlsapi.dll	
activeds	5.2.3790.0 (srv03_rtm.030324-2048)	543.50 KB (556,544 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\activeds.dll	
adslsdp	5.2.3790.0 (srv03_rtm.030324-2048)	312.00 KB (319,488 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\adslsdp.dll	
credui	5.2.3790.0 (srv03_rtm.030324-2048)	288.00 KB (294,912 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	c:\windows\system32\credui.dll	

atl	3.00	2282	348.00 KB (356,352 bytes)	
	3/25/2003 5:00 AM	Microsoft Corporation		
		c:\windows\system32\atl.dll		
rdpsvc	5.2.3790.0 (srv03_rtm.030324-2048)			
	256.63 KB (262,792 bytes)	6/11/2003 5:01		
PM	Microsoft Corporation			
		c:\windows\system32\rdpsvc.dll		
rdpsnd	5.2.3790.0 (srv03_rtm.030324-2048)		63.00	
	KB (64,512 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\rdpsnd.dll		
scrdird	5.2.3790.0 (srv03_rtm.030324-2048)		67.50	
	KB (69,120 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\scrdird.dll		
cscui	5.2.3790.0 (srv03_rtm.030324-2048)			
	574.00 KB (587,776 bytes)	3/25/2003 5:00		
AM	Microsoft Corporation			
		c:\windows\system32\cscui.dll		
msacm32	5.2.3790.0 (srv03_rtm.030324-2048)		77.00	
	KB (78,848 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\msacm32.drv		
msacm32	5.2.3790.0 (srv03_rtm.030324-2048)			
	252.00 KB (258,048 bytes)	3/25/2003 5:00		
AM	Microsoft Corporation			
		c:\windows\system32\msacm32.dll		
imaadp32	5.2.3790.0 (srv03_rtm.030324-2048)		55.00	
	KB (56,320 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\imaadp32.acm		
msadp32	5.2.3790.0 (srv03_rtm.030324-2048)		49.00	
	KB (50,176 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\msadp32.acm		
msg711	5.2.3790.0 (srv03_rtm.030324-2048)		33.00	
	KB (33,792 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\msg711.acm		
msgsm32	5.2.3790.0 (srv03_rtm.030324-2048)		66.50	
	KB (68,096 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\msgsm32.acm		
tssoft32	1.01	29.00 KB (29,696 bytes)		
	3/25/2003 5:00 AM	DSP GROUP, INC.		
		c:\windows\system32\tssoft32.acm		
tsd32	Not Available	38.00 KB (38,912 bytes)		
	3/25/2003 5:00 AM	Not Available		
		c:\windows\system32\tsd32.dll		
wkssvc	5.2.3790.0 (srv03_rtm.030324-2048)			
	304.00 KB (311,296 bytes)	3/25/2003 5:00		
AM	Microsoft Corporation			
		c:\windows\system32\wkssvc.dll		
wiarpc	5.2.3790.0 (srv03_rtm.030324-2048)		67.50	
	KB (69,120 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\wiarpc.dll		
dmserver	5.2.3790.0 (srv03_rtm.030324-2048)		45.50	
	KB (46,592 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\dmserver.dll		
es	2001.12.4720.0 (srv03_rtm.030324-2048)			
	637.50 KB (652,800 bytes)	3/25/2003 5:00		
AM	Microsoft Corporation			
		c:\windows\system32\es.dll		
pchsvc	5.2.3790.0 (srv03_rtm.030324-2048)		94.50	
	KB (96,768 bytes)	6/11/2003 5:03 PM	Microsoft Corporation	
		c:\windows\pchealth\helpctr\binaries\pchsvc.dll		
srvc	5.2.3790.0 (srv03_rtm.030324-2048)			
	188.00 KB (192,512 bytes)	3/25/2003 5:00		

AM	Microsoft Corporation			
		c:\windows\system32\srvc.dll		
seclogon	5.2.3790.0 (srv03_rtm.030324-2048)		41.50	
	KB (42,496 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\seclogon.dll		
wmisvc	5.2.3790.0 (srv03_rtm.030324-2048)			
	408.50 KB (418,304 bytes)	6/11/2003 5:00		
PM	Microsoft Corporation			
		c:\windows\system32\wbem\wmisvc.dll		
vssapi	5.2.3790.0 (srv03_rtm.030324-2048)		1.28	
	MB (1,339,904 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\vssapi.dll		
sens	5.2.3790.0 (srv03_rtm.030324-2048)		90.50	
	KB (92,672 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\sens.dll		
winmr	5.2.3790.0 (srv03_rtm.030324-2048)		39.00	
	KB (39,936 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\winmr.dll		
comsvcs	2001.12.4720.0 (srv03_rtm.030324-2048)		2.96	
	MB (3,106,816 bytes)	6/11/2003 5:01 PM	Microsoft Corporation	
		c:\windows\system32\comsvcs.dll		
wbemcore	5.2.3790.0 (srv03_rtm.030324-2048)		1.64	
	MB (1,723,904 bytes)	6/11/2003 5:00 PM	Microsoft Corporation	
		c:\windows\system32\wbem\wbemcore.dll		
esscli	5.2.3790.0 (srv03_rtm.030324-2048)			
	919.50 KB (941,568 bytes)	6/11/2003 5:00		
PM	Microsoft Corporation			
		c:\windows\system32\wbem\esscli.dll		
wmiutils	5.2.3790.0 (srv03_rtm.030324-2048)			
	285.00 KB (291,840 bytes)	6/11/2003 5:00		
PM	Microsoft Corporation			
		c:\windows\system32\wbem\wmiutils.dll		
repdrvfs	5.2.3790.0 (srv03_rtm.030324-2048)			
	595.50 KB (609,792 bytes)	6/11/2003 5:00		
PM	Microsoft Corporation			
		c:\windows\system32\wbem\repdrvfs.dll		
wmiprvsd	5.2.3790.0 (srv03_rtm.030324-2048)		1.38	
	MB (1,443,328 bytes)	6/11/2003 5:00 PM	Microsoft Corporation	
		c:\windows\system32\wbem\wmiprvsd.dll		
wbemess	5.2.3790.0 (srv03_rtm.030324-2048)			
	976.50 KB (999,936 bytes)	6/11/2003 5:00		
PM	Microsoft Corporation			
		c:\windows\system32\wbem\wbemess.dll		
ncprov	5.2.3790.0 (srv03_rtm.030324-2048)			
	133.50 KB (136,704 bytes)	6/11/2003 5:00		
PM	Microsoft Corporation			
		c:\windows\system32\wbem\ncprov.dll		
netman	5.2.3790.0 (srv03_rtm.030324-2048)			
	591.00 KB (605,184 bytes)	3/25/2003 5:00		
AM	Microsoft Corporation			
		c:\windows\system32\netman.dll		
mprapi	5.2.3790.0 (srv03_rtm.030324-2048)			
	238.00 KB (243,712 bytes)	3/25/2003 5:00		
AM	Microsoft Corporation			
		c:\windows\system32\mprapi.dll		
rtutils	5.2.3790.0 (srv03_rtm.030324-2048)		81.50	
	KB (83,456 bytes)	3/25/2003 5:00 AM	Microsoft Corporation	
		c:\windows\system32\rtutils.dll		
rasapi32	5.2.3790.0 (srv03_rtm.030324-2048)			
	589.50 KB (603,648 bytes)	3/25/2003 5:00		
AM	Microsoft Corporation			
		c:\windows\system32\rasapi32.dll		
rasman	5.2.3790.0 (srv03_rtm.030324-2048)			
	154.50 KB (158,208 bytes)	3/25/2003 5:00		
AM	Microsoft Corporation			
		c:\windows\system32\rasman.dll		

tapi32	5.2.3790.0 (srv03_rtm.030324-2048)	
	493.00 KB (504,832 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\tapi32.dll	
wzcsvc	5.2.3790.0 (srv03_rtm.030324-2048)	
	608.50 KB (623,104 bytes)	3/25/2003 6:19
AM	Microsoft Corporation	
	c:\windows\system32\wzcsvc.dll	
wmi	5.2.3790.0 (srv03_rtm.030324-2048)	5.00
	KB (5,120 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\wmi.dll	
dhcpcsvc	5.2.3790.0 (srv03_rtm.030324-2048)	
	279.50 KB (286,208 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\dhcpcsvc.dll	
wzcsapi	5.2.3790.0 (srv03_rtm.030324-2048)	49.50
	KB (50,688 bytes)	3/25/2003 6:19 AM
	Microsoft Corporation	
	c:\windows\system32\wzcsapi.dll	
netshell	5.2.3790.0 (srv03_rtm.030324-2048)	2.65
	MB (2,779,648 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\netshell.dll	
clusapi	5.2.3790.0 (srv03_rtm.030324-2048)	
	165.50 KB (169,472 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\clusapi.dll	
hnetcfg	5.2.3790.0 (srv03_rtm.030324-2048)	
	764.00 KB (782,336 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\hnetcfg.dll	
wininet	6.00.3790.0 (srv03_rtm.030324-2048)	1.43
	MB (1,500,672 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\wininet.dll	
rasdlg	5.2.3790.0 (srv03_rtm.030324-2048)	1.35
	MB (1,420,800 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\rasdlg.dll	
rasadhlp	5.2.3790.0 (srv03_rtm.030324-2048)	13.00
	KB (13,312 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\rasadhlp.dll	
ntlsapi	5.2.3790.0 (srv03_rtm.030324-2048)	14.50
	KB (14,848 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\ntlsapi.dll	
rdpclip	5.2.3790.0 (srv03_rtm.030324-2048)	
	156.00 KB (159,744 bytes)	6/11/2003 5:01
PM	Microsoft Corporation	
	c:\windows\system32\rdpclip.exe	
wsock32	5.2.3790.0 (srv03_rtm.030324-2048)	23.00
	KB (23,552 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\wsock32.dll	
explorer	6.00.3790.0 (srv03_rtm.030324-2048)	1.63
	MB (1,704,960 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\explorer.exe	
browseui	6.00.3790.0 (srv03_rtm.030324-2048)	2.42
	MB (2,536,960 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\browseui.dll	
shdocvw	6.00.3790.0 (srv03_rtm.030324-2048)	3.20
	MB (3,359,744 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\shdocvw.dll	
apphelp	5.2.3790.0 (srv03_rtm.030324-2048)	
	262.50 KB (268,800 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\apphelp.dll	
themeui	6.00.3790.0 (srv03_rtm.030324-2048)	
	823.00 KB (842,752 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\themeui.dll	

msimg32	5.2.3790.0 (srv03_rtm.030324-2048)	7.00
	KB (7,168 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\msimg32.dll	
linkinfo	5.2.3790.0 (srv03_rtm.030324-2048)	42.00
	KB (43,008 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\linkinfo.dll	
ntshrui	6.00.3790.0 (srv03_rtm.030324-2048)	
	233.50 KB (239,104 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\ntshrui.dll	
urlmon	6.00.3790.0 (srv03_rtm.030324-2048)	1.21
	MB (1,271,296 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\urlmon.dll	
webcheck	6.00.3790.0 (srv03_rtm.030324-2048)	
	664.50 KB (680,448 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\webcheck.dll	
stobject	5.2.3790.0 (srv03_rtm.030324-2048)	
	178.00 KB (182,272 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\stobject.dll	
batmeter	6.00.3790.0 (srv03_rtm.030324-2048)	55.50
	KB (56,832 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\batmeter.dll	
powrprof	6.00.3790.0 (srv03_rtm.030324-2048)	36.00
	KB (36,864 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\powrprof.dll	
printui	5.2.3790.0 (srv03_rtm.030324-2048)	1.09
	MB (1,142,784 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\printui.dll	
cfgmgr32	5.2.3790.0 (srv03_rtm.030324-2048)	16.00
	KB (16,384 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\cfgmgr32.dll	
drprov	5.2.3790.0 (srv03_rtm.030324-2048)	26.50
	KB (27,136 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\drprov.dll	
ntlanman	5.2.3790.0 (srv03_rtm.030324-2048)	
	108.00 KB (110,592 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\ntlanman.dll	
netui0	5.2.3790.0 (srv03_rtm.030324-2048)	
	181.50 KB (185,856 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\netui0.dll	
netui1	5.2.3790.0 (srv03_rtm.030324-2048)	
	482.00 KB (493,568 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\netui1.dll	
davclnt	5.2.3790.0 (srv03_rtm.030324-2048)	59.00
	KB (60,416 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\davclnt.dll	
browseui	6.00.3790.0 (srv03_rtm.030324-2048)	61.50
	KB (62,976 bytes)	3/25/2003 5:00 AM
	Microsoft Corporation	
	c:\windows\system32\browseui.dll	
shdoclc	6.00.3790.0 (srv03_rtm.030324-2048)	
	588.00 KB (602,112 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\shdoclc.dll	
mydocs	6.00.3790.0 (srv03_rtm.030324-2048)	
	129.00 KB (132,096 bytes)	3/25/2003 5:00
AM	Microsoft Corporation	
	c:\windows\system32\mydocs.dll	
actxprxy	6.00.3790.0 (srv03_rtm.030324-2048)	
	230.00 KB (235,520 bytes)	3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\actxprxy.dll

sendmail 6.00.3790.0 (srv03_rtm.030324-2048) 97.00
KB (99,328 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\sendmail.dll

ersvc 5.2.3790.0 (srv03_rtm.030324-2048) 61.00
KB (62,464 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\ersvc.dll

wzqkpick 1.0 (32-bit) 116.00 KB (118,784 bytes)
6/13/2003 2:34 PM WinZip Computing, Inc.
c:\program files (x86)\winzip\wzqkpick.exe

wow64 5.2.3790.0 (srv03_rtm.030324-2048)
438.50 KB (449,024 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\wow64.dll

wow64win 5.2.3790.0 (srv03_rtm.030324-2048)
514.50 KB (526,848 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\wow64win.dll

wow64cpu 5.2.3790.0 (srv03_rtm.030324-2048) 38.00
KB (38,912 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\wow64cpu.dll

dmadmin 5.2.3790.0 (srv03_rtm.030324-2048)
643.50 KB (658,944 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\dmadmin.exe

dmutil 5.2.3790.0 (srv03_rtm.030324-2048) 71.50
KB (73,216 bytes) 3/25/2003 1:50 AM Microsoft
Corporation c:\windows\system32\dmutil.dll

osuninst 5.2.3790.0 (srv03_rtm.030324-2048) 6.50
KB (6,656 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\osuninst.dll

dmconfig 5.2.3790.0 (srv03_rtm.030324-2048)
924.00 KB (946,176 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\dmconfig.dll

dmintf 5.2.3790.0 (srv03_rtm.030324-2048) 25.00
KB (25,600 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\dmintf.dll

fmifs 5.2.3790.0 (srv03_rtm.030324-2048) 53.00
KB (54,272 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\fmifs.dll

ulib 5.2.3790.0 (srv03_rtm.030324-2048)
448.50 KB (459,264 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\ulib.dll

ifsutil 5.2.3790.0 (srv03_rtm.030324-2048)
214.00 KB (219,136 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\ifsutil.dll

mmc 5.2.3790.0 (srv03_rtm.030324-2048) 2.48
MB (2,598,912 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\mmc.exe

mfc42u 6.00.3014.0 3.34 MB (3,506,176 bytes)
3/25/2003 5:00 AM Microsoft Corporation
c:\windows\system32\mfc42u.dll

oleacc 4.2.5406.0 (srv03_rtm.030324-2048)
485.00 KB (496,640 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\oleacc.dll

mmcbase 5.2.3790.0 (srv03_rtm.030324-2048)
139.00 KB (142,336 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\mmcbase.dll

comdlg32 6.00.3790.0 (srv03_rtm.030324-2048)
706.00 KB (722,944 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\comdlg32.dll

mmcndmgr 5.2.3790.0 (srv03_rtm.030324-2048)
3.10 MB (3,248,640 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\mmcndmgr.dll

msxml3 8.40.9419.0 3.42 MB (3,590,656 bytes)
3/25/2003 5:00 AM Microsoft Corporation
c:\windows\system32\msxml3.dll

cmprops 5.2.3790.0 (srv03_rtm.030324-2048)
455.00 KB (465,920 bytes) 6/11/2003 5:00

PM Microsoft Corporation
c:\windows\system32\cmprops.dll

mmfutil 5.2.3790.0 (srv03_rtm.030324-2048) 25.00
KB (25,600 bytes) 6/11/2003 5:00 PM Microsoft
Corporation c:\windows\system32\mmfutil.dll

ntmsmgr 5.2.3790.0 (srv03_rtm.030324-2048) 1.18
MB (1,241,088 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\ntmsmgr.dll

ntmsapi 5.2.3790.0 (sr v03_rtm.030324-2048)
118.00 KB (120,832 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\ntmsapi.dll

els 5.2.3790.0 (srv03_rtm.030324-2048)
504.50 KB (516,608 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\els.dll

dfrgsnap 5.2.3790.0 (srv03_rtm.030324-2048) 97.00
KB (99,328 bytes) 3/25/2003 5:00 AM Microsoft Corp.
and Executive Software International, Inc.
c:\windows\system32\dfrgsnap.dll

dfrgres 5.2.3790.0 (srv03_rtm.030324-2048) 50.00
KB (51,200 bytes) 3/25/2003 5:00 AM Microsoft Corp.
and Executive Software International, Inc.
c:\windows\system32\dfrgres.dll

mycomput 5.2.3790.0 (srv03_rtm.030324-2048)
266.00 KB (272,384 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\mycomput.dll

filemgmt 5.2.3790.0 (srv03_rtm.030324-2048)
914.00 KB (935,936 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\filemgmt.dll

wbemcntl 5.2.3790.0 (srv03_rtm.030324-2048)
511.50 KB (523,776 bytes) 6/11/2003 5:00

PM Microsoft Corporation
c:\windows\system32\wbem\wbemcntl.dll

localsec 5.2.3790.0 (srv03_rtm.030324-2048)
638.50 KB (653,824 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\localsec.dll

smlogcfg 5.2.3790.0 (srv03_rtm.030324-2048)
995.50 KB (1,019,392 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\smlogcfg.dll

pdh 5.2.3790.0 (srv03_rtm.030324-2048)
727.50 KB (744,960 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\pdh.dll

odbc32 3.525.1022.0 (srv03_rtm.030324-2048)
620.00 KB (634,880 bytes) 3/25/2003 5:00

AM Microsoft Corporation
c:\windows\system32\odbc32.dll

odbcbc 2000.085.1022.00 (srv03_rtm.030324-2048) 48.00
KB (49,152 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\odbcbc.dll

odbcint 3.525.1022.0 (srv03_rtm.030324-2048) 88.00
KB (90,112 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\odbcint.dll
snmpsnap 5.2.3790.0 (srv03_rtm.030324-2048)
540.50 KB (553,472 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\snmpsnap.dll
dmmskmgr 5.2.3790.0 (srv03_rtm.030324-2048)
515.00 KB (527,360 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\dmmskmgr.dll
dmmskres 5.2.3790.0 (srv03_rtm.030324-2048)
115.00 KB (117,760 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\dmmskres.dll
devmgr 5.2.3790.0 (srv03_rtm.030324-2048)
603.50 KB (617,984 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\devmgr.dll
rasuser 5.2.3790.0 (srv03_rtm.030324-2048)
489.00 KB (500,736 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\rasuser.dll
dsprop 5.2.3790.0 (srv03_rtm.030324-2048)
337.00 KB (345,088 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\dsprop.dll
dsuixt 5.2.3790.0 (srv03_rtm.030324-2048)
222.00 KB (227,328 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\dsuixt.dll
mprsnap 5.2.3790.0 (srv03_rtm.030324-2048) 2.72
MB (2,848,768 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\mprsnap.dll

rtfiltr 5.2.3790.0 (srv03_rtm.030324-2048)
230.00 KB (235,520 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\rtfiltr.dll
servdeps 5.2.3790.0 (srv03_rtm.030324-2048)
139.50 KB (142,848 bytes) 6/11/2003 5:00
PM Microsoft Corporation
c:\windows\system32\servdeps.dll
riched32 5.2.3790.0 (srv03_rtm.030324-2048) 5.00
KB (5,120 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\riched32.dll

riched20 5.31.23.1218 1.25 MB (1,313,280 bytes)
3/25/2003 5:00 AM Microsoft Corporation
c:\windows\system32\riched20.dll
adsnt 5.2.3790.0 (srv03_rtm.030324-2048)
749.50 KB (767,488 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\adsnt.dll
mlang 5.2.3790.0 (srv03_rtm.030324-2048)
799.00 KB (818,176 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\mlang.dll
dmdlgs 5.2.3790.0 (srv03_rtm.030324-2048)
670.50 KB (686,592 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\dmdlgs.dll
dmview 5.2.3790.0 (srv03_rtm.030324-2048)
207.00 KB (211,968 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\dmview.ocx
vds_ps 5.2.3790.0 (srv03_rtm.030324-2048) 31.00
KB (31,744 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\vds_ps.dll

dmvdsitf 5.2.3790.0 (srv03_rtm.030324-2048)
321.00 KB (328,704 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\dmvdsitf.dll
vds 5.2.3790.0 (srv03_rtm.030324-2048)
543.50 KB (556,544 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\vds.exe
vdsutil 5.2.3790.0 (srv03_rtm.030324-2048) 98.00
KB (100,352 bytes) 3/25/2003 5:00 AM Microsoft
Corporation c:\windows\system32\vdsutil.dll
vdsbas 5.2.3790.0 (srv03_rtm.030324-2048)
321.50 KB (329,216 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\vdsbas.dll
vdsdyndr 5.2.3790.0 (srv03_rtm.030324-2048)
710.50 KB (727,552 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\vdsdyndr.dll
cmd 5.2.3790.0 (srv03_rtm.030324-2048)
493.50 KB (505,344 bytes) 3/25/2003 5:00
AM Microsoft Corporation
c:\windows\system32\cmd.exe
db2mh 8.1.3.72 20.06 KB (20,544 bytes)
5/30/2003 5:23 PM International Business
Machines Corporationd:\sqlib\bin\db2mh.exe
db2bp 8.1.3.72 1.57 MB (1,641,472 bytes)
5/30/2003 2:54 PM International Business
Machines Corporationd:\sqlib\bin\db2bp.exe
db2wint64 8.1.3.72 24.00 KB (24,576 bytes)
5/30/2003 2:46 PM International Business
Machines Corporationd:\sqlib\bin\db2wint64.dll
db2osse64 8.1.3.72 477.00 KB (488,448 bytes)
5/30/2003 7:34 AM International Business
Machines Corporationd:\sqlib\bin\db2osse64.dll
db2sys64 8.1.3.72 4.32 MB (4,530,688 bytes)
5/30/2003 1:43 PM International Business
Machines Corporationd:\sqlib\bin\db2sys64.dll
db2sysp64 8.1.3.72 147.00 KB (150,528 bytes)
5/30/2003 2:46 PM International Business
Machines Corporationd:\sqlib\bin\db2sysp64.dll
db2app64 8.1.3.72 5.86 MB (6,149,632 bytes)
5/30/2003 2:34 PM International Business
Machines Corporationd:\sqlib\bin\db2app64.dll
db2util64 8.1.3.72 2.17 MB (2,277,376 bytes)
5/30/2003 2:46 PM International Business
Machines Corporationd:\sqlib\bin\db2util64.dll
db2abind64 8.1.3.72 440.50 KB (451,072 bytes)
5/30/2003 2:34 PM International Business
Machines Corporationd:\sqlib\bin\db2abind64.dll
db2cli64 8.1.3.72 5.37 MB (5,632,000 bytes)
5/30/2003 2:35 PM International Business
Machines Corporationd:\sqlib\bin\db2cli64.dll
db2locale64 8.1.3.72 57.00 KB (58,368 bytes)
5/30/2003 2:44 PM International Business
Machines Corporationd:\sqlib\bin\db2locale64.dll
db2install64 8.1.3.72 9.00 KB (9,216 bytes)
5/30/2003 7:30 AM International Business
Machines Corporationd:\sqlib\bin\db2install64.dll
db2trcapi64 8.1.3.72 43.50 KB (44,544 bytes)
5/30/2003 7:36 AM International Business
Machines Corporationd:\sqlib\bin\db2trcapi64.dll
db2dasapi64 8.1.3.72 873.50 KB (894,464 bytes)
5/30/2003 7:44 AM International Business
Machines Corporationd:\sqlib\bin\db2dasapi64.dll
db2dascmn64 8.1.3.72 146.50 KB (150,016 bytes)
5/30/2003 7:44 AM International Business
Machines Corporationd:\sqlib\bin\db2dascmn64.dll

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db2genreg64      8.1.3.72  320.50 KB (328,192 bytes)
                  5/30/2003 7:35 AM  International Business
Machines Corporationd:\sql\bin\db2genreg64.dll
db2osse_db264    8.1.3.72  621.00 KB (635,904 bytes)
                  5/30/2003 7:34 AM  International Business
Machines Corporationd:\sql\bin\db2osse_db264.dll
db2daskrb64      8.1.3.72  41.50 KB (42,496 bytes)
                  5/30/2003 7:44 AM  International Business
Machines Corporationd:\sql\bin\db2daskrb64.dll
helpctr          5.2.3790.0 (srv03_rtm.030324-2048) 1.97
MB (2,066,432 bytes) 6/11/2003 5:03 PM  Microsoft
Corporation
c:\windows\pchealth\helpctr\binaries\helpctr.exe

hcappres         5.2.3790.0 (srv03_rtm.030324-2048) 6.00
KB (6,144 bytes) 6/11/2003 5:03 PM  Microsoft
Corporation
c:\windows\pchealth\helpctr\binaries\hcappres.dll

itss             5.2.3790.0 (srv03_rtm.030324-2048)
349.00 KB (357,376 bytes) 3/25/2003 5:00
AM  Microsoft Corporation
c:\windows\system32\itss.dll
pchshell         5.2.3790.0 (srv03_rtm.030324-2048)
277.50 KB (284,160 bytes) 6/11/2003 5:03
PM  Microsoft Corporation
c:\windows\pchealth\helpctr\binaries\pchshell.dll

mshtml           6.00.3790.0 (srv03_rtm.030324-2048) 7.83
MB (8,208,384 bytes) 3/25/2003 5:00 AM  Microsoft
Corporation
c:\windows\system32\mshtml.dll
msimtf           5.2.3790.0 (srv03_rtm.030324-2048)
528.00 KB (540,672 bytes) 3/25/2003 5:00
AM  Microsoft Corporation
c:\windows\system32\msimtf.dll
msctf            5.2.3790.0 (srv03_rtm.030324-2048)
924.50 KB (946,688 bytes) 3/25/2003 5:00
AM  Microsoft Corporation
c:\windows\system32\msctf.dll
jscript          5.6.0.8515 1.21 MB (1,268,736 bytes)
3/25/2003 5:00 AM  Microsoft Corporation
c:\windows\system32\jscript.dll
msls31           3.10.349.0 448.00 KB (458,752 bytes)
3/25/2003 5:00 AM  Microsoft Corporation
c:\windows\system32\msls31.dll
imm32            5.2.3790.0 (srv03_rtm.030324-2048)
307.50 KB (314,880 bytes) 3/25/2003 5:00
AM  Microsoft Corporation
c:\windows\system32\imm32.dll
mshtmlmd         6.00.3790.0 (srv03_rtm.030324-2048) 1.34
MB (1,408,512 bytes) 3/25/2003 5:00 AM  Microsoft
Corporation
c:\windows\system32\mshtmlmd.dll

vbscript         5.6.0.8515 1.06 MB (1,110,016 bytes)
3/25/2003 5:00 AM  Microsoft Corporation
c:\windows\system32\vbscript.dll
mfc42            6.00.3014.0 3.36 MB (3,526,656 bytes)
3/25/2003 5:00 AM  Microsoft Corporation
c:\windows\system32\mfc42.dll
msinfo           5.2.3790.0 (srv03_rtm.030324-2048) 1.20
MB (1,257,984 bytes) 6/11/2003 5:03 PM  Microsoft
Corporation
c:\windows\pchealth\helpctr\binaries\msinfo.dll

helpsvc          5.2.3790.0 (srv03_rtm.030324-2048) 2.18
MB (2,289,152 bytes) 6/11/2003 5:03 PM  Microsoft
Corporation
c:\windows\pchealth\helpctr\binaries\helpsvc.exe

```

[Services]

Display Name	Name	State	Start Mode	Path	Error Control
Alerter	Alerter	Stopped	Disabled	Share Process	
	c:\windows\system32\svchost.exe -k localservice				
	Normal	NT AUTHORITY\LocalService	0		
Application Layer Gateway Service		ALG			
	Stopped	Manual	Own Process		
	c:\windows\system32\alg.exe	Normal	NT		
AUTHORITY\LocalService		0			
Application Management	AppMgmt	Stopped			
	Manual	Share Process			
	c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0		
Windows Audio	AudioSrv	Stopped	Disabled		
	Share Process				
	c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0		
Background Intelligent Transfer Service		BITS			
	Stopped	Manual	Share Process		
	c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0		
Computer Browser	Browser	Stopped	Manual		
	Share Process				
	c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0		
Indexing Service	CiSvc	Stopped	Disabled		
	Share Process				
	c:\windows\system32\cisvc.exe	Normal			
	LocalSystem	0			
ClipBook	ClipSrv	Stopped	Disabled	Own Process	
	c:\windows\system32\clipsrv.exe	Normal			
	LocalSystem	0			
COM+ System Application	COMSysApp				
	Stopped	Manual	Own Process		
	c:\windows\system32\dlhhost.exe				
/processid:{02d4b3f1-fd88-11d1-960d-00805fc79235}					
	Normal	LocalSystem	0		
Cryptographic Services	CryptSvc	Stopped			
	Manual	Share Process			
	c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0		
DB2 - DB2-0	DB2-0	Stopped	Manual	Own	
Process	d:\sql\bin\db2syscs.exe	Normal			
	.\db2admin	0			
DB2DAS - DB2DAS00	DB2DAS00				
	Stopped	Manual	Own Process		
	d:\sql\bin\db2dasrrm.exe	Normal			
	.\db2admin	0			
DB2 Governor	DB2GOVERNOR	Stopped			
	Manual	Own Process			
	d:\sql\bin\db2govds.exe	Normal			
	LocalSystem	0			
DB2 JDBC Applet Server	DB2JDS	Stopped			
	Manual	Own Process			
	d:\sql\bin\db2jds.exe	Normal			
	LocalSystem	0			
DB2 License Server	DB2LICD	Stopped	Manual	Own	
Process	d:\sql\bin\db2licd.exe	Ignore			
	LocalSystem	0			
DB2 Registry Reflector	DB2NTREGREFLECTOR				
	Stopped	Manual	Own Process		
	d:\sql\bin\db2reg64.exe	Normal			
	LocalSystem	0			
DB2 Security Server	DB2NTSECSEVER	Stopped			
	Manual	Own Process			

	d:\sql\lib\bin\db2sec.exe	Normal	
	LocalSystem 0		
DB2 - DB2QUAL-0	DB2QUAL-0	Running	
	Manual Own Process		
	d:\sql\lib\bin\db2syscs.exe	Normal	
	.\db2qual 0		
DB2 - DB2QUAL-1	DB2QUAL-1	Running	
	Manual Own Process		
	d:\sql\lib\bin\db2syscs.exe	Normal	
	.\db2qual 0		
DB2 Remote Command Server	DB2REMOTECD		
	Running Auto Own Process		
	d:\sql\lib\bin\db2rcmd.exe	Ignore	
	.\db2tpch 0		
DB2 - DB2TPCH-0	DB2TPCH-0	Stopped	
	Manual Own Process		
	d:\sql\lib\bin\db2syscs.exe	Normal	
	.\db2tpch 0		
DB2 - DB2TPCH-1	DB2TPCH-1	Stopped	
	Manual Own Process		
	d:\sql\lib\bin\db2syscs.exe	Normal	
	.\db2tpch 0		
DB2 - DB2TPCH-2	DB2TPCH-2	Stopped	
	Manual Own Process		
	d:\sql\lib\bin\db2syscs.exe	Normal	
	.\db2tpch 0		
DB2 - DB2TPCH-3	DB2TPCH-3	Stopped	
	Manual Own Process		
	d:\sql\lib\bin\db2syscs.exe	Normal	
	.\db2tpch 0		
Distributed File System	Dfs	Stopped	
	Manual Own Process		
	c:\windows\system32\dfssvc.exe	Normal	
	LocalSystem 0		
DHCP Client	Dhcp	Running	Auto
	Share Process		
	c:\windows\system32\svchost.exe -k		
networkservice	Normal	NT	
AUTHORITY\NetworkService	0		
Logical Disk Manager	Administrative Service		
	dmadmin	Running	Auto Share Process
	c:\windows\system32\dmadmin.exe /com		
	Normal LocalSystem 0		
Logical Disk Manager	dmserver	Running	Auto
	Share Process		
	c:\windows\system32\svchost.exe -k netsvcs		
	Normal LocalSystem 0		
DNS Client	Dnscache	Running	Auto
	Share Process		
	c:\windows\system32\svchost.exe -k		
net workservice	Normal	NT	
AUTHORITY\NetworkService	0		
Error Reporting Service	ERSvc	Running	Auto
	Share Process		
	c:\windows\system32\svchost.exe -k winerr		
	Ignore LocalSystem 0		
Event Log	Eventlog	Running	Auto Share Process
	c:\windows\system32\services.exe		
	Normal LocalSystem 0		
COM+ Event System	EventSystem	Running	
	Manual Share Process		
	c:\windows\system32\svchost.exe -k netsvcs		
	Normal LocalSystem 0		
Help and Support	helpsvc	Running	Auto
	Share Process		
	c:\windows\system32\svchost.exe -k netsvcs		
	Normal LocalSystem 0		
Human Interface Device Access	HidServ	Stopped	
	Disabled Share Process		

	c:\windows\system32\svchost.exe -k netsvcs		
	Normal LocalSystem 0		
HTTP SSL	HTTPFilter	Stopped	Manual
	Share Process		
	c:\windows\system32\lsass.exe	Normal	
	LocalSystem 0		
IAS Jet Database Access	IASJet	Stopped	
	Manual Share Process		
	c:\windows\syswow64\svchost.exe -k iasjet		
	Normal LocalSystem 0		
IMAPI CD-Burning COM Service	ImapiService		
	Stopped Disabled Own Process		
	c:\windows\system32\imapi.exe	Normal	
	LocalSystem 0		
Intersite Messaging	IsmServ	Stopped	Disabled Own
Process	c:\windows\system32\ismsserv.exe		
	Normal LocalSystem 0		
Kerberos Key Distribution Center	kdc		
	Stopped Disabled Share Process		
	c:\windows\system32\lsass.exe	Normal	
	LocalSystem 0		
Server	lanmanserver	Running	Auto
	Share Process		
	c:\windows\system32\svchost.exe -k netsvcs		
	Normal LocalSystem 0		
Workstation	lanmanworkstation	Running	Auto
	Share Process		
	c:\windows\system32\svchost.exe -k netsvcs		
	Normal LocalSystem 0		
License Logging	LicenseService	Stopped	
	Disabled Own Process		
	c:\windows\system32\llssrv.exe	Normal	NT
AUTHORITY\NetworkService	0		
TCP/IP NetBIOS Helper	LmHosts	Running	Auto
	Share Process		
	c:\windows\system32\svchost.exe -k localservice		
	Normal NT AUTHORITY\LocalService 0		
Messenger	Messenger	Stopped	Disabled Share Process
	c:\windows\system32\svchost.exe -k netsvcs		
	Normal LocalSystem 0		
Distributed Transaction Coordinator	MSDTC		
	Running Auto Own Process		
	c:\windows\system32\msdtc.exe	Normal	NT
AUTHORITY\NetworkService	0		
Windows Installer	MSIServer	Stopped	Manual
	Share Process		
	c:\windows\system32\msiexec.exe /v		
	Normal LocalSystem 0		
Network DDE	NetDDE	Stopped	Disabled
	Share Process		
	c:\windows\system32\netdde.exe	Normal	
	LocalSystem 0		
Network DDE DSDM	NetDDEdsdm	Stopped	
	Disabled Share Process		
	c:\windows\system32\netdde.exe	Normal	
	LocalSystem 0		
Net Logon	Netlogon	Stopped	Manual Share Process
	c:\windows\system32\lsass.exe	Normal	
	LocalSystem 0		
Network Connections	Netman	Running	Manual
	Share Process		
	c:\windows\system32\svchost.exe -k netsvcs		
	Normal LocalSystem 0		
Network Location Awareness (NLA)	Nla		
	Running Manual Share Process		
	c:\windows\system32\svchost.exe -k netsvcs		
	Normal LocalSystem 0		

File Replication Process	NtFrS	Stopped	Manual	Own
c:\windows\system32\ntfrs.exe				
	LocalSystem	0	Ignore	
NT LM Security Support Provider			NtLmSsp	
	Stopped	Manual	Share Process	
c:\windows\system32\lsass.exe				
	LocalSystem	0	Normal	
Removable Storage	NtmsSvc	Stopped	Manual	
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0	
Plug and Play	PlugPlay	Running	Auto	
	Share Process			
c:\windows\system32\services.exe				
	Normal	LocalSystem	0	
IPSEC Services	PolicyAgent		Stopped	
	Manual	Share Process		
c:\windows\system32\lsass.exe				
	LocalSystem	0	Normal	
Protected Storage	ProtectedStorage		Running	Auto
	Share Process			
c:\windows\system32\lsass.exe				
	LocalSystem	0	Normal	
Remote Access Auto Connection Manager		Stopped	Manual	RasAuto
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0	
Remote Access Connection Manager		Stopped	Manual	RasMan
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0	
Remote Desktop Help Session Manager		Stopped	Manual	RDSessMgr
	Own Process			
c:\windows\system32\sessmgr.exe				
	Normal	LocalSystem	0	
Routing and Remote Access		Stopped	Disabled	RemoteAccess
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0	
Remote Registry		Manual	Share Process	RemoteRegistry
	Share Process			
c:\windows\system32\svchost.exe -k regsvc				
	Normal	NT AUTHORITY\LocalService	0	
Remote Procedure Call (RPC) Locator		Stopped	Manual	RpcLocator
	Own Process			
c:\windows\system32\locator.exe				
	Normal	NT AUTHORITY\NetworkService	0	
Remote Procedure Call (RPC)		Share Process	Running	RpcSs
	Share Process			
c:\windows\system32\svchost -k rpcss				
	Normal	LocalSystem	0	
Resultant Set of Policy Provider		Manual	Share Process	RSOPProv
	Share Process			
c:\windows\system32\rsopprov.exe				
	Normal	LocalSystem	0	
Special Administration Console Helper		Stopped	Manual	sacsvr
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0	
Security Accounts Manager		Share Process	Running	SamSs
	Share Process			
c:\windows\system32\lsass.exe				
	LocalSystem	0	Normal	
Smart Card		Share Process	Stopped	SCardSvr
	Share Process			
c:\windows\system32\scardsvr.exe				
	Ignore	NT AUTHORITY\LocalService	0	

Task Scheduler	Schedule	Stopped	Manual	
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0	
Secondary Logon	seclogon	Running	Auto	
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Ignore	LocalSystem	0	
System Event Notification		SENS	Running	Auto
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0	
Shell Hardware Detection		Running	Auto	ShellHWDetection
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Ignore	LocalSystem	0	
Print Spooler	Spooler	Stopped	Manual	Own
	Spooler			
c:\windows\system32\spoolsv.exe				
	Normal	LocalSystem	0	
Windows Image Acquisition (WIA)		Stopped	Disabled	stisvc
	Share Process			
c:\windows\system32\svchost.exe -k imgsvc				
	Normal	NT AUTHORITY\LocalService	0	
Microsoft Software Shadow Copy Provider		Stopped	Manual	swprv
	Own Process			
c:\windows\system32\svchost.exe -k swprv				
	Normal	LocalSystem	0	
Performance Logs and Alerts		Stopped	Manual	SysmonLog
	Own Process			
c:\windows\system32\smlogsvc.exe				
	Normal	NT Authority\NetworkService	0	
TelephonyTapiSrv		Stopped	Manual	Share Process
	Share Process			
c:\windows\system32\svchost.exe -k tapisrv				
	Normal	LocalSystem	0	
Terminal Services	TermService		Running	
	Share Process			
c:\windows\system32\svchost.exe -k termsvcs				
	Normal	LocalSystem	0	
Telnet	TlntSvr	Stopped	Disabled	Own Process
	Own Process			
c:\windows\system32\tlntsvr.exe				
	Normal	NT AUTHORITY\LocalService	0	
Distributed Link Tracking Server	TrkSvr		Stopped	
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0	
Distributed Link Tracking Client	TrkWks		Stopped	
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0	
Terminal Services Session Directory		Stopped	Disabled	Tssdis
	Own Process			
c:\windows\system32\tssdis.exe				
	Normal	LocalSystem	0	
Upload Manager	uploadmgr	Stopped	Manual	
	Share Process			
c:\windows\system32\svchost.exe -k netsvcs				
	Normal	LocalSystem	0	
Uninterruptible Power Supply		Manual	Own Process	UPS
	Own Process			
c:\windows\system32\ups.exe				
	Normal	NT AUTHORITY\LocalService	0	
Virtual Disk Service	vds		Running	Manual
	Own Process			
c:\windows\system32\vds.exe				
	Normal	LocalSystem	0	
Volume Shadow Copy		Manual	Own Process	VSS
	Own Process			
c:\windows\system32\vssvc.exe				
	Normal	LocalSystem	0	

```

Windows Time      W32Time Running Auto
Share Process
c:\windows\system32\svchost.exe -k netsvcs
Normal LocalSystem 0
WebClient WebClient Stopped Disabled Share Process
c:\windows\system32\svchost.exe -k localservice
Normal NT AUTHORITY\LocalService 0

WinHTTP Web Proxy Auto-Discovery Service
WinHttpAutoProxySvc Stopped
Manual Share Process
c:\windows\system32\svchost.exe -k localservice
Normal NT AUTHORITY\LocalService 0

Windows Management Instrumentation winmgmt
Running Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs
Ignore LocalSystem 0
Windows Management Instrumentation Driver Extensions
Wmi Stopped Manual Share Process
c:\windows\system32\svchost.exe -k netsvcs
Normal LocalSystem 0
WMI Performance Adapter WmiApSrv
Stopped Manual Own Process
c:\windows\system32\wbem\wmiaprsrv.exe
Normal LocalSystem 0
Automatic Updates wuauserv Stopped Manual
Share Process
c:\windows\system32\svchost.exe -k netsvcs
Normal LocalSystem 0
Wireless Configuration WZCSVC Stopped
Manual Share Process
c:\windows\system32\svchost.exe -k netsvcs
Normal LocalSystem 0

```

[Program Groups]

Group Name	Name	User Name
Accessories	Default User:Accessories	
	Default User	
Accessories\Accessibility	Default	
User:Accessories\Accessibility	Default User	
Accessories\Entertainment	Default	
User:Accessories\Entertainment	Default User	
Startup	Default User:Startup	Default User
Accessories	All Users:Accessories	All Users
Accessories\Accessibility	All	
Users:Accessories\Accessibility	All Users	
Accessories\Communications	All	
Users:Accessories\Communications	All Users	
Accessories\Entertainment	All	
Users:Accessories\Entertainment	All Users	
Accessories\System Tools	All	
Users:Accessories\System Tools	All Users	
Administrative Tools	All Users:Administrative Tools	All Users
IBM DB2	All Users:IBM DB2	All Users
IBM DB2\Command Line Tools	All Users:IBM DB2\Command Line Tools	All Users
IBM DB2\Development Tools	All Users:IBM DB2\Development Tools	All Users
IBM DB2\General Administration Tools	All Users:IBM DB2\General Administration Tools	All Users
IBM DB2\Information	All Users:IBM DB2\Information	All Users
IBM DB2\Monitoring Tools	All Users:IBM DB2\Monitoring Tools	All Users
IBM DB2\Set-up Tools	All Users:IBM DB2\Set-up Tools	All Users
Startup	All Users:Startup	All Users

```

WinZip All Users:WinZip All Users
Accessories NT
AUTHORITY\SYSTEM:Accessories NT
AUTHORITY\SYSTEM
Accessories\Accessibility NT
AUTHORITY\SYSTEM:Accessories\Accessibility NT
AUTHORITY\SYSTEM
Accessories\Entertainment NT
AUTHORITY\SYSTEM:Accessories\Entertainment NT
AUTHORITY\SYSTEM
Startup NT AUTHORITY\SYSTEM:Startup NT
AUTHORITY\SYSTEM
Accessories KMCHAN-
TIGER2\db2tpch:Accessories KMCHAN-
TIGER2\db2tpch
Accessories\Accessibility KMCHAN-
TIGER2\db2tpch:Accessories\Accessibility KMCHAN-
TIGER2\db2tpch
Accessories\Entertainment KMCHAN-
TIGER2\db2tpch:Accessories\Entertainment KMCHAN-
TIGER2\db2tpch
Startup KMCHAN-TIGER2\db2tpch:Startup
KMCHAN-TIGER2\db2tpch
Accessories KMCHAN-
TIGER2\db2qual:Accessories KMCHAN-
TIGER2\db2qual
Accessories\Accessibility KMCHAN-
TIGER2\db2qual:Accessories\Accessibility KMCHAN-
TIGER2\db2qual
Accessories\Entertainment KMCHAN-
TIGER2\db2qual:Accessories\Entertainment KMCHAN-
TIGER2\db2qual
Startup KMCHAN-TIGER2\db2qual:Startup
KMCHAN-TIGER2\db2qual

```

[Startup Programs]

Program	Command	User Name	Location
desktop	desktop.ini	NT AUTHORITY\SYSTEM	Startup
desktop	desktop.ini	KMCHAN-TIGER2\db2tpch	Startup
desktop	desktop.ini	KMCHAN-TIGER2\db2qual	Startup
desktop	desktop.ini	DEFAULT	Startup
desktop	desktop.ini	All Users	Common Startup
WinZip Quick Pick	c:\progra~2\winzip\wzqpick.exe	All Users	Common Startup

[OLE Registration]

Object	Local Server
Sound (OLE2)	sndrec32.exe
Media Clip	mplay32.exe
Video Clip	mplay32.exe /avi
MIDI Sequence	mplay32.exe /mid
Sound	Not Available
Media Clip	Not Available
WordPad Document	"%programfiles%\windows nt\accessories\wordpad.exe"
Bitmap Image	mspaint.exe

[Windows Error Reporting]

Time	Type	Details
6/24/2003 9:35 PM	Application Hang	Hanging application notepad.exe, version 5.2.3790.0, hang module kernel32.dll, version 5.2.3790.0, hang address 0x0000000000054de0.

6/19/2003 9:41 AM Application Hang Hanging application wordpad.exe, version 5.2.3790.0, hang module kernel32.dll, version 5.2.3790.0, hang address 0x0000000000054de0.

 6/19/2003 9:40 AM Application Hang Hanging application wordpad.exe, version 5.2.3790.0, hang module kernel32.dll, version 5.2.3790.0, hang address 0x0000000000054de0.

[Internet Settings]

[Internet Explorer]

[Following are sub-categories of this main category]
 [Summary]

Item	Value
Version	6.0.3790.0
Build	63790
Application Path	C:\Program Files\Internet Explorer
Language	English (United States)
Active Printer	Not Available
Cipher Strength	128-bit
Content Advisor	Disabled
IEAK Install	No

[File Versions]

File	Version	Size	Date	Path
	Company			
actxprxy.dll	6.0.3790.0	230 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
advpack.dll	6.0.3790.0	240 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
asctrls.ocx	6.0.3790.0	219 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
browseic.dll	6.0.3790.0	62 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
browseui.dll	6.0.3790.0	2,478 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
cdfview.dll	6.0.3790.0	292 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
comctl32.dll	5.82.3790.0	1,584 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
dxtrans.dll	6.3.3790.0	562 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
dxtmsft.dll	6.3.3790.0	918 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
iecont.dll	<File Missing>	Not Available	Not Available	Not Available
	Not Available	Not Available	Not Available	Not Available
iecontlc.dll	<File Missing>	Not Available	Not Available	Not Available
	Not Available	Not Available	Not Available	Not Available
iedkcs32.dll	16.0.3790.0	676 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			

iepeers.dll	6.0.3790.0	652 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
iesetup.dll	6.0.3790.0	89 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
ieunit.inf	Not Available	20 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Not Available			
ieexplore.exe	6.0.3790.0	102 KB	3/25/2003 5:00:00 AM	C:\Program Files\Internet Explorer
	Microsoft Corporation			
imgutil.dll	5.2.3790.0	101 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
inetcp1.cpl	6.0.3790.0	589 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
inetcp1c.dll	6.0.3790.0	108 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
inseng.dll	6.0.3790.0	213 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
mlang.dll	6.0.3790.0	799 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
msencode.dll	<File Missing>	Not Available	Not Available	Not Available
	Not Available	Not Available	Not Available	Not Available
mshta.exe	6.0.3790.0	59 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
mshtml.dll	6.0.3790.0	8,016 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
mshtml.tlb	6.0.3790.0	1,319 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
mshtmlled.dll	6.0.3790.0	1,376 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
mshtmlr.dll	6.0.3790.0	56 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
msident.dll	6.0.3790.0	128 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
msidntld.dll	6.0.3790.0	14 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
msieftp.dll	6.0.3790.0	536 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
msrating.dll	6.0.3790.0	379 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
mstime.dll	6.0.3790.0	1,621 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
occache.dll	6.0.3790.0	201 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			
proctexe.ocx	<File Missing>	Not Available	Not Available	Not Available
	Not Available	Not Available	Not Available	Not Available
sendmail.dll	6.0.3790.0	97 KB	3/25/2003 5:00:00 AM	C:\WINDOWS\system32
	Microsoft Corporation			

shdoclc.dll 6.0.3790.0 588 KB 3/25/2003 5:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation
shdocvw.dll 6.0.3790.0 3,281 KB 3/25/2003 5:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation
shfolder.dll 6.0.3790.0 37 KB 3/25/2003 5:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation
shlwapi.dll 6.0.3790.0 722 KB 3/25/2003 5:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation
tdc.ocx 1.3.0.3130 177 KB 3/25/2003 5:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation
url.dll 6.0.3790.0 45 KB 3/25/2003 5:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation
urlmon.dll 6.0.3790.0 1,242 KB 3/25/2003 5:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation
webcheck.dll 6.0.3790.0 665 KB 3/25/2003 5:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation
wininet.dll 6.0.3790.0 1,466 KB 3/25/2003 5:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

[Connectivity]

Item	Value
Connection Preference	Never dial

LAN Settings

AutoConfigProxy	Not Available
AutoProxyDetectMode	Disabled
AutoConfigURL	http://autoproxy
Proxy	Enabled
ProxyServer	proxy.ch.intel.com:1022
ProxyOverride	<local>

[Cache]

[Following are sub-categories of this main category]
[Summary]

Item	Value
------	-------

Page Refresh Type Automatic
Temporary Internet Files Folder C:\Documents and Settings\NetworkService\Local Settings\Temporary Internet Files
Total Disk Space Not Available
Available Disk Space Not Available
Maximum Cache Size Not Available
Available Cache Size Not Available

[List of Objects]

Program File	Status	CodeBase
No cached object information available		

[Content]

[Following are sub-categories of this main category]
[Summary]

Item	Value
Content Advisor	Disabled

[Personal Certificates]

Issued To	Issued By	Validity	Signature Algorithm
No personal certificate information available			

[Other People Certificates]

Issued To	Issued By	Validity	Signature Algorithm
No other people certificate information available			

[Publishers]

Name
No publisher information available

[Security]

Zone	Security Level
My Computer	Custom
Local intranet	Medium-low
Trusted sites	Low
Internet	Medium
Restricted sites	High

Appendix B: Database Build Scripts

Buildtpcd

```
#!/usr/bin/perl
# usage buildtpcd [QUAL]

# ASSUMPTIONS: all ddl files have commits in them!
($myName = $0) =~ s@.*/@@; $usage="
Usage: buildtpcd [QUAL]
    where QUAL is the optional parameter saying to build the
    qualification
        database (sf = .1 = 100MB)\n";

$qual="";
if (@ARGV == 1)
{
    $qual = $ARGV[0];
}

# get TPC-D specific environment variables
require 'getvars';

# Use the macros in here so that they can handle the platform
differences.
# macro.pl should be sourced from cmvc, other people wrote
and maintain it.
require "macro.pl";
require "tpcdmacro.pl";

# Make output unbuffered.
select(STDOUT);
$| = 1 ;

# verify that necessary environment variables for building the
database
# are present. Default those that aren't necessary
require "version";
$instance=$ENV{"DB2INSTANCE"};
if (length($ENV{"TPCD_PLATFORM"}) <= 0)
{
    die "TPCD_PLATFORM environment variable
not set\n";
}
$platform=$ENV{"TPCD_PLATFORM"};
if ( $platform eq "nt" )
{
    $sep="&";
}
else
{
    $sep=";";
}
if ((length($ENV{"TPCD_BUILD_STAGE"}) <= 0) ||
($ENV{"TPCD_BUILD_STAGE"}) eq "NULL" )
{
    $ENV{"TPCD_BUILD_STAGE"} = "ALL";
}
if (length($ENV{"TPCD_PRODUCT"}) <= 0)
{
    die "Must set TPCD_PRODUCT env't var.\n";
}
if ( length($ENV{"TPCD_DBNAME"}) <= 0 )
{
    die "TPCD_DBNAME environment variable not
set\n";
}
if (length($ENV{"TPCD_MODE"}) <= 0)
{
    die "TPCD_MODE environment variable not set -
uni/smp/mln\n";
}
if (length($ENV{"TPCD_SF"}) <= 0)
{
    die "TPCD_SF environment variable not set\n";
}
if (length($ENV{"TPCD_DBPATH"}) <= 1)
{
    # if no db pathname specified, build the db in the home
    directory
    if ( $platform eq "aix" || $platform eq "sun" || $platform eq
"ptx" || $platform eq "hp")
    {
        $ENV{"TPCD_DBPATH"} = $ENV{"HOME"};
    }
    elsif ( $platform eq "nt" )
    {
        $ENV{"TPCD_DBPATH"} =
$ENV{"HOMEDRIVE"};
    }
    else
    {
        die "platform $platform not supported yet\n";
    }
}
if (length($ENV{"TPCD_DDLPATH"}) <= 0)
{
    # if no db pathname specified, use default
    $ENV{"TPCD_DBPATH"} =
"/afs/tor/groups/dbp/perf/benchmark/tpcd/ddl/vanilla";
}
if (length($ENV{"TPCD_GENERATE_SEED_FILE"}) <=
0)
{
    # if no db pathname specified, use default
    $ENV{"TPCD_GENERATE_SEED_FILE"} =
"no";
}
if (length($ENV{"TPCD_DDL"}) <= 0)
{
    $ENV{"TPCD_DDL"} = "dss.ddl";
}
if (length($ENV{"TPCD_STAGING_TABLE_DDL"}) <=
0)
{
    $ENV{"TPCD_STAGING_TABLE_DDL"} = "NULL";
}
if
(length($ENV{"TPCD_PRELOAD_STAGING_TABLE_SC
RIPT"}) <= 0)
{
    $ENV{"TPCD_PRELOAD_STAGING_TABLE_DDL"}
= "NULL";
}
if
(length($ENV{"TPCD_DELETE_STAGING_TABLE_SQL
"}) <= 0)
{
    $ENV{"TPCD_DELETE_STAGING_TABLE_DDL"} =
"NULL";
}
if (length($ENV{"TPCD_TBSP_DDL"}) <= 0)
{
    $ENV{"TPCD_TBSP_DDL"} = "dss.tbsp.ddl";
}
```

```

}
if (length($ENV{"TPCD_INDEXDDL"}) <= 0)
{
    $ENV{"TPCD_INDEXDDL"} = "dss.index";
}
if (length($ENV{"TPCD_RUNSTATS"}) <= 0)
{
    $ENV{"TPCD_RUNSTATS"} = "dss.runstats";
}
if (length($ENV{"TPCD_RUNSTATSHORT"}) <= 0)
{
    $ENV{"TPCD_RUNSTATSHORT"} = "NULL";
}
if (length($ENV{"TPCD_ADD_RI"}) <= 0)
{
    $ENV{"TPCD_ADD_RI"} = "NULL";
}
if (length($ENV{"TPCD_AST"}) <= 0)
{
    $ENV{"TPCD_AST"} = "NULL";
}
if ( ($ENV{"TPCD_INPUT"}) eq "NULL" )
{
    if (length($ENV{"TPCD_DBGEN"}) <= 0)
    {
        die "Must set TPCD_DBGEN if pregenerated flatfiles
are not provided (TPCD_INPUT=NULL)\n";
    }
}
if ( $qual eq "QUAL" )
{
    if ( ($ENV{"TPCD_QUAL_INPUT"}) eq "NULL" )
    {
        if (length($ENV{"TPCD_DBGEN"}) <= 0)
        {
            die "Must set TPCD_DBGEN if pregenerated flatfiles
are not provided (TPCD_QUAL_INPUT=NULL)\n";
        }
    }
}
if (length($ENV{"TPCD_TEMP"}) <= 1)
{
    $ENV{"TPCD_TEMP"} = "/u/$instance/sql/lib/tmp";
}
if (length($ENV{"TPCD_SORTBUF"}) <= 0)
{
    $ENV{"TPCD_SORTBUF"} = 4096;
}
if (length($ENV{"TPCD_LOAD_PARALLELISM"}) <= 0)
{
    $ENV{"TPCD_LOAD_PARALLELISM"} = 0;
}
if (length($ENV{"TPCD_LOADSTATS"}) <= 0)
{
    $ENV{"TPCD_LOADSTATS"} = "no";
}
if (length($ENV{"TPCD_COPY_DIR"}) <= 0)
{
    $ENV{"TPCD_COPY_DIR"} =
"$delimdev$delimnull";
}
if (length($ENV{"TPCD_FASTPARSE"}) <= 0)
{
    $ENV{"TPCD_FASTPARSE"} = "no";
}
if (length($ENV{"TPCD_BACKUP_DIR"}) <= 0)
{
    $ENV{"TPCD_BACKUP_DIR"} =
"$delimdev$delimnull";
}

```

```

if (length($ENV{"TPCD_LOG"}) <= 0)
{
    $ENV{"TPCD_LOG"} = "no";
}
if (length($ENV{"TPCD_LOGPRIMARY"}) <= 0)
{
    $ENV{"TPCD_LOGPRIMARY"} = "NULL";
}
if (length($ENV{"TPCD_LOGSECOND"}) <= 0)
{
    $ENV{"TPCD_LOGSECOND"} = "NULL";
}
if (length($ENV{"TPCD_LOGFILSIZ"}) <= 0)
{
    $ENV{"TPCD_LOGFILSIZ"} = "NULL";
}
if (length($ENV{"TPCD_LOG_DIR"}) <= 0)
{
    $ENV{"TPCD_LOG_DIR"} = "NULL";
}
if (length($ENV{"TPCD_LOG_DIR_SETUP_SCRIPT"}) <= 0)
{
    $ENV{"TPCD_LOG_DIR_SETUP_SCRIPT"} =
"NULL";
}
if (length($ENV{"TPCD_CONFIGFILE"}) <= 0)
{
    $ENV{"TPCD_CONFIGFILE"} = "dss.dbconfig";
}
if (length($ENV{"TPCD_DBM_CONFIG"}) <= 0)
{
    $ENV{"TPCD_DBM_CONFIG"} = "NULL";
}
if (length($ENV{"TPCD_MACHINE"}) <= 0)
{
    $ENV{"TPCD_MACHINE"} = "medium";
}
if (length($ENV{"TPCD_SMPDEGREE"}) <= 0)
{
    $ENV{"TPCD_SMPDEGREE"} = 1;
}
if (length($ENV{"TPCD_AGENTPRI"}) <= 0)
{
    $ENV{"TPCD_AGENTPRI"} = NULL;
}
if (length($ENV{"TPCD_ACTIVATE"}) <= 0)
{
    $ENV{"TPCD_ACTIVATE"} = "no";
}
if (length($ENV{"TPCD_AUDIT"}) <= 0)
{
    die "Must set TPCD_AUDIT env't var. Real audit timing
sequence run if yes\n";
}
if (length($ENV{"TPCD_AUDIT_DIR"}) <= 0)
{
    die "TPCD_AUDIT_DIR environment variable not set\n";
}
if (length($ENV{"TPCD_LOAD_DB2SET_SCRIPT"}) <= 0)
{
    $ENV{"TPCD_LOAD_DB2SET_SCRIPT"}="NULL"
}
if (length($ENV{"TPCD_DB2SET_SCRIPT"}) <= 0)
{
    $ENV{"TPCD_DB2SET_SCRIPT"}="NULL"
}
if (length($ENV{"TPCD_BUFFERPOOL_DEF"}) <= 0)
{
}

```

```

$ENV{"TPCD_BUFFERPOOL_DEF"}="NULL"
}
if (length($ENV{"TPCD_EXPLAIN_DDL"}) <= 0)
{
$ENV{"TPCD_EXPLAIN_DDL"}="NULL"
}
if (length($ENV{"TPCD_NODEGROUP_DEF"}) <= 0)
{
$ENV{"TPCD_NODEGROUP_DEF"}="NULL"
}
if (length($ENV{"TPCD_PHYS_NODE"}) <= 0)
{
$ENV{"TPCD_NODEGROUP_DEF"}="NULL"
}
if (length($ENV{"TPCD_APPEND_ON"}) <= 0)
{
$ENV{"TPCD_APPEND_ON"}="yes"
}
#set up local variables
$tpcdVersion=$ENV{"TPCD_VERSION"};
$buildStage=$ENV{"TPCD_BUILD_STAGE"};
$product=$ENV{"TPCD_PRODUCT"};
$dbname=$ENV{"TPCD_DBNAME"};
$mode=$ENV{"TPCD_MODE"};
$sf=$ENV{"TPCD_SF"};
$sfReal=$sf;      # need a "saved" one for qualification
stuff
$dbpath=$ENV{"TPCD_DBPATH"};
$dddlpath=$ENV{"TPCD_DDLPATH"};
$dddl=$ENV{"TPCD_DDL"};
$stagingTbl=$ENV{"TPCD_STAGING_TABLE_DDL"};
$preloadSampleUF=$ENV{"TPCD_PRELOAD_STAGING
_TABLE_SCRIPT"};
$deleteSampleUF=$ENV{"TPCD_DELETE_STAGING_TA
BLE_SQL"};
$buffpooldef=$ENV{"TPCD_BUFFERPOOL_DEF"};
$nodegroupdef=$ENV{"TPCD_NODEGROUP_DEF"};
$tbspddl=$ENV{"TPCD_TBSP_DDL"};
$indexddl=$ENV{"TPCD_INDEXDDL"};
$extraindex=$ENV{"TPCD_EXTRAINDEX"};
$runstats=$ENV{"TPCD_RUNSTATS"};
$runstatShort=$ENV{"TPCD_RUNSTATSHORT"};
$dbgen=$ENV{"TPCD_DBGEN"};
$input=$ENV{"TPCD_INPUT"};
$earlyindex=$ENV{"TPCD_EARLYINDEX"};
$idtemp=$ENV{"TPCD_TEMP"};
$sortbuf=$ENV{"TPCD_SORTBUF"};
$load_parallelism=$ENV{"TPCD_LOAD_PARALLELISM
"};
$loadstats=$ENV{"TPCD_LOADSTATS"};
$copydir=$ENV{"TPCD_COPY_DIR"};
$fparse=$ENV{"TPCD_FASTPARSE"};
$addRI=$ENV{"TPCD_ADD_RI"};
$astFile=$ENV{"TPCD_AST"};
$genSeed=$ENV{"TPCD_GENERATE_SEED_FILE"};
$appendOn=$ENV{"TPCD_APPEND_ON"};

if ( $fparse eq "yes" )
{
$fastparse="FASTPARSE";
}
else
{
$fastparse=" ";
}
$backupdir=$ENV{"TPCD_BACKUP_DIR"};
$logprimary=$ENV{"TPCD_LOGPRIMARY"};
$logsecond=$ENV{"TPCD_LOGSECOND"};
$logfilsiz=$ENV{"TPCD_LOGFILSIZ"};
$log=$ENV{"TPCD_LOG"};

```

```

$logDir=$ENV{"TPCD_LOG_DIR"};
$logDirScript=$ENV{"TPCD_LOG_DIR_SETUP_SCRIPT"
};
$machine=$ENV{"TPCD_MACHINE"};
$configfile=$ENV{"TPCD_CONFIGFILE"};
$dbmconfig=$ENV{"TPCD_DBM_CONFIG"};
$loadconfigfile=$ENV{"TPCD_LOAD_CONFIGFILE"};
$loadDBMconfig=$ENV{"TPCD_LOAD_DBM_CONFIGF
ILE"};
$smpdegree=$ENV{"TPCD_SMPDEGREE"};
$agentpri=$ENV{"TPCD_AGENTPRI"};
$activate=$ENV{"TPCD_ACTIVATE"};
$RealAudit=$ENV{"TPCD_AUDIT"};
$loadscript=$ENV{"TPCD_LOAD_SCRIPT"};
$auditDir=$ENV{"TPCD_AUDIT_DIR"};
$loadsetScript=$ENV{"TPCD_LOAD_DB2SET_SCRIPT"
};
$setScript=$ENV{"TPCD_DB2SET_SCRIPT"};
$explainDDL=$ENV{"TPCD_EXPLAIN_DDL"};
$user=$ENV{"USER"};

# set up override of some parameters to override for
qualification database
if ( $qual eq "QUAL" )
{
$loadscript=$ENV{"TPCD_LOAD_SCRIPT_QUAL"};
if ( length($ENV{"TPCD_QUAL_DBNAME"}) <= 0 )
{
die "TPCD_QUAL_DBNAME environment variable
not set\n";
}
$dbname=$ENV{"TPCD_QUAL_DBNAME"};

print "DBNAME= $dbname\n\n";

$sf=$ENV{"TPCD_QUAL_SF"};
if ( length($ENV{"TPCD_QUAL_DDL"}) <= 0 )
{
die "TPCD_QUAL_DDL environment variable not
set\n";
}
$dddl=$ENV{"TPCD_QUAL_DDL"};
if ( length($ENV{"TPCD_QUAL_TBSP_DDL"}) <= 0 )
{
die "TPCD_QUAL_TBSP_DDL environment variable
not set\n";
}
$tbspddl=$ENV{"TPCD_QUAL_TBSP_DDL"};
$input=$ENV{"TPCD_QUAL_INPUT"};
if ( length($ENV{"TPCD_QUALCONFIGFILE"}) <= 0 )
{
die "TPCD_QUALCONFIGFILE environment variable
not set\n";
}
$configfile=$ENV{"TPCD_QUALCONFIGFILE"};
if ( length($ENV{"TPCD_DBM_QUALCONFIG"}) <= 0
)
{
die "TPCD_DBM_QUALCONFIG environment
variable not set\n";
}
$dbmconfig=$ENV{"TPCD_DBM_QUALCONFIG"};
if (
length($ENV{"TPCD_LOAD_QUALCONFIGFILE"}) <= 0
)
{
die "TPCD_LOAD_QUALCONFIGFILE environment
variable not set\n";
}
}

```

```

$loadconfigfile=$ENV{"TPCD_LOAD_QUALCONFIGFILE"};
if (
length($ENV{"TPCD_LOAD_DBM_QUALCONFIGFILE"}
) <= 0 )
{
    die "TPCD_LOAD_DBM_QUALCONFIGFILE
environment variable not set \n";
}

$loadDBMconfig=$ENV{"TPCD_LOAD_DBM_QUALCO
NFIGFILE"};
if (length($ENV{"TPCD_LOG_DIR"}) <= 0)
{
    $ENV{"TPCD_LOG_DIR"} = "NULL";
}
$logDir=$ENV{"TPCD_LOG_QUAL_DIR"};
}

if (( $mode eq "uni" ) || ( $mode eq "smp" ))
{
    $all_ln="once";
    $all_pn="once";
    $once="once";
}
else
{
    $all_ln="all_ln";
    $all_pn="all_pn";
    $once="once";
}

# set up the config parms for the load, indexes and stats
if ($loadconfigfile eq "NULL")
{
    if ( ($machine eq "NULL") )
    {
        die "Neither a LOAD config file name
not a machine size has been specified!\n";
    }
    $ioclrs=1;
    $chnpggs=60;

    if ( $machine eq "small" )
    {
        $buffpage = 5000;
        $sorheap = 3000;
        $sheapthres = 8000;
        $util_heap_sz = 5000;
        $ioservers = 6;
    }
    elseif ( $machine eq "medium" )
    {
        $buffpage = 10000;
        $sorheap = 8000;
        $sheapthres = 20000;
        $util_heap_sz = 10000;
        $ioservers = 10;
    }
    elseif ( $machine eq "big" )
    {
        $buffpage = 30000;
        $sorheap = 20000;
        $sheapthres = 50000;
        $util_heap_sz = 30000;
        $ioservers = 20;
    }
    elseif ( $machine eq "sunsm" )
    {

```

```

        $buffpage = 60000;
        $sorheap = 20000;
        $sheapthres = 80000;
        $util_heap_sz = 30000;
        $ioservers = 80;
    }
    elseif ( $machine eq "eastwood" )
    {
        $buffpage = 80000;
        $sorheap = 50000;
        $sheapthres = 81000;
        $ioclrs = 4;
        $chnpggs = 30;
        $ioservers = 21;
        $util_heap_sz = 50000;
    }
}
# echo parameter settings to acknowledge what is being built
if ( $buildStage ne "ALL" )
{
    print "***** STARTING the build process at the
$buildStage Stage *****\n";
}
print "Building a TPC-D Version $tpcdVersion $sf GB
database on $dbpath with: \n";
print " Mode = $mode \n";
print " Tablespace ddl in $ddlpath${delim}$tbspddl \n";
if ( $nodegroupdef ne "NULL" )
{
    print " Nodegroup ddl in
$ddlpath${delim}$nodegroupdef \n";
}
if ( $buffpooldef ne "NULL" )
{
    print " Bufferpool ddl in
$ddlpath${delim}$buffpooldef \n";
}
print " Table ddl in $ddlpath${delim}$ddl \n";
print " Index ddl in $ddlpath${delim}$indexddl \n";
if ( $extraindex ne "no" )
{
    print " Indices to create after the load
$ddlpath${delim}$extraindex \n";
}
if ( $loadscript eq "NULL" )
{
    if ( $input eq "NULL" )
    {
        print " Data generated by DBGEN in $dbgen \n";
    }
    else
    {
        print " Data loaded from flat files in $input \n";
    }
}
if ( $earlyindex eq "yes" )
{
    print " Indexes created before loading \n";
}
else
{
    print " Indexes created after loading \n";
}
if ( $addRI ne "NULL" )
{
    print " RI being used from $ddlpath${delim}$addRI \n";
}
if ( $astFile ne "NULL" )
{

```

```

    print " AST being used from
$ddlpath${delim}$astFile\n";
}
if ( $loadstats eq "yes" )
{
    if ( $earlyindex eq "yes" )
    {
        print " Statistics for tables and
indexes gathered during load\n";
    }
    else
    {
        if ( $runstatShort eq "NULL" )
        {
            print " Statistics for tables
and indexes gathered after load using
$ddlpath${delim}$runstats \n";
        }
        else
        {
            print " Statistics for tables and
indexes gathered after load using $ddlpath${delim}$runstats
and $ddlpath${delim}$runstatShort \n";
        }
    }
}
else
{
    if ( $runstatShort eq "NULL" )
    {
        print " Statistics for tables and
indexes gathered after load using $ddlpath${delim}$runstats
\n";
    }
    else
    {
        print " Statistics for tables and
indexes gathered after load using $ddlpath${delim}$runstats
and $ddlpath${delim}$runstatShort \n";
    }
}
if ( $loadconfigfile ne "NULL" )
{
    print " Database Configuration parameters for
LOAD taken from $ddlpath${delim}$loadconfigfile\n";
}
if ( $loadDBMconfig ne "NULL" )
{
    print " Database manager Configuration
parameters for LOAD taken from
$ddlpath${delim}$loadDBMconfig\n";
}
if ( $configfile ne "NULL" )
{
    print " Database Configuration parameters taken
from $ddlpath${delim}$configfile\n";
}
else
{
    print " Database Configuration paramters taken
from $ddlpath${delim}dss.dbconfig${sfReal}GB\n";
    $configfile="dss.dbconfig${sfReal}GB";
}
if ( $dbmconfig ne "NULL" )
{
    print " Database Manager Configuration
parameters taken from $ddlpath${delim}$dbmconfig\n";
}
else
{

```

```

    print " Database Manager Configuration
parameters taken from
$ddlpath${delim}dss.dbmconfig${sfReal}GB\n";
    $configfile="dss.dbmconfig${sfReal}GB";
}
#print " Copy image for load command created in
$copydir\n";
if ( $log eq "yes" )
{
    print " Backup files placed in $backupdir\n";
}
else
{
    print " No backup will be taken.\n";
}
print " Log retain set to $log\n";
if ( $logDir eq "NULL" )
{
    print " Log files remain in database path\n";
}
else
{
    print " Log file path set to $logDir\n";
}
if ( $logprimary eq "NULL" )
{
    print " Log Primary left at default\n";
}
else
{
    print " Log Primary set to $logprimary\n";
}
if ( $logsecond eq "NULL" )
{
    print " Log Second left at default\n";
}
else
{
    print " Log second set to $logsecond\n";
}
if ( $logfilsiz eq "NULL" )
{
    print " Logfilsiz left at default\n";
}
else
{
    print " Logfilsiz set to $logfilsiz\n";
}

if (($loadconfigfile eq "") || ($loadconfigfile eq "NULL"))
{
    print " Machine size set to $machine so the
following configuration\n";
    print " parameters are used for load, create index
and runstats: \n";
    print " BUFFPAGE = $buffpage \n";
    print " SORTHEAP = $sortheap \n";
    print " SHEAPTHRES = $sheapthres\n";
    print " NUM_IOSERVERS = $ioservers\n";
    print " NUM_IOCLEANERS = $ioclnrs\n";
    print " CHNGPGS_THRESH = $chngpgs\n";
    print " UTIL_HEAP_SZ = $util_heap_sz\n";
    print " Degree of parallelism (dft_degree and
max_querydegree) set to $smpdegree\n";
    print " Parameters for load are: temp file =
$ltemp\n";
    print " sort buf =
$sortbuf\n";
    print " ld parallelism =
$load_parallelism \n";

```

```

        if ( $fparse eq "yes" )
        {
            print "
FASTPARSE used on load\n";
        }
    }
    if ( $loadscript ne "NULL" )
    {
        print " Load commands in
$ddlpath${delim}$loadscript\n";
    }

    print " Degree of parallelism (dft_degree and
max_querydegree) set to $smpdegree\n";
    if ( $agentpri ne "NULL" )
    {
        print " AGENTPRI set to $agentpri\n";
    }
    if ( $activate eq "yes" )
    {
        print " Database will be activated when build is
complete\n";
    }
    if ( $explainDDL ne "NULL" )
    {
        print " EXPLAIN DDL being used from
$ddlpath${delim}$explainDDL\n";
    }
    else
    {
        print " EXPLAIN DDL being used from default sqllib
directory\n";
    }

    print "Sleeping for 15 seconds to give you a chance to
reconsider...\n";
    sleep 15;
    # getc();

    # don't need separate calls for mln/mpp vs uni since the
    $all_in will be
    # defined appropriately
    if ( $platform eq "nt" )
    {
        if (($mode eq "uni") || ($mode eq "smp"))
        {
            #spaces required for NT
            $src=&doddb_noconn("db2set DB2OPTIONS=\\" -t -v
+c\\\"",$all_in);
        }
        else
        {
            $src=&doddb_noconn("db2set DB2OPTIONS=\\\\" -t -v
+c\\\"",$all_in);
        }
    }
    else
    {
        if (($mode eq "uni") || ($mode eq "smp"))
        {
            $src=&doddb_noconn("db2set
DB2OPTIONS=\\"-t -v +c\\\"",$all_in);
        }
        else
        {
            $src=&doddb_noconn("db2set
DB2OPTIONS=\\\\"-t -v +c\\\"",$all_in);
        }
    }
}

```

```

if ( $src != 0 )
{
    die "failure setting db2 environment variable :
DB2OPTIONS rc=$rc\n";
}

if ( $platform eq "nt" )
{
    $src=&doddb_noconn("db2set
DB2NTNOCACHE=ON",$all_in);
}

if ( $ret != 0 )
{
    die "failure setting db2 environment variable :
DB2NTNOCACHE\n";
}
# @de980723wlc

# set the db2 env vars for loading, from the
TPCD_LOAD_DB2SET_SCRIPT script
if ( $loadsetScript ne "NULL" )
{
    if ( $platform eq "nt" )
    {
        ##### Mike , th, the- for some reason rah on NT doesn't
        like running
        ##### a fully qualified file name. Switch to dir, then run
        ## check CHANGE THIS to have single node and
        multinode execution
        if (( $mode eq "uni" ) || ( $mode eq "smp" ))
        {
            $ret=system("${ddlpath}${delim}$loadsetScript");
            # $ret=system("cd ${ddlpath} $sep $loadsetScript");
        }
        else
        {
            $ret=system("db2_all \\"call
${ddlpath}${delim}$loadsetScript\");
        }
    }
    else
    {
        $ret=system("${ddlpath}${delim}$loadsetScript");
    }
    if ( $ret != 0 )
    {
        die "failure setting load time db2set parms from
$loadsetScript \n";
    }
}

# stopping and starting db2 before we continue
print "Stopping DB2 ...\n";
$src=system("db2stop");
if ( $src < 0 )
{
    die "failure during db2stop rc = $src \n";
}
print "Starting DB2 ...\n";
$src=system("db2start");
if ( $src != 0 )
{
    die "failure during db2start rc = $src \n";
}

# create the database
if ( $buildStage eq "ALL" )
{
    # build from the beginning
    &outtime("*** Starting to create the database");
}

```

```

&dodb_noconn("db2 \"create database $dbname on
$dbbpath collate using identity with 'TPC-D $sf
GB'\"",$once);
# remove the update.pair.num file so when setupDir runs,
it doesn't
# hang waiting for an answer on nt
&rm("$auditDir${delim}$dbname.$user.update.pair.num");

# reset the db and dbm configuration before we start
&dodb_noconn("db2 reset database configuration for
$dbname",$all_in);
&dodb_conn($dbname,"db2 alter bufferpool ibmdefaultbp
size -1 $sep \
    db2 grant connect on database to public $sep
\
    db2 grant dbadm on database to $dbname $sep
\
    db2 commit",$once);
&dodb_noconn("db2 reset database manager
configuration",$once);

# update the log information first
# set up the log directory before we do any index creation
if ($logDirScript ne "NULL")
{
    system("${ddlpath}${delim}SetLogDir.bat");
#    system("perl $ddlpath${delim}$logDirScript");
}
elseif ($logDir ne "NULL")
{
    &dodb_noconn("db2 update database configuration for
$dbname using newlogpath $logDir",$all_in);
}
$setLogs=0;
$setLogString="";
if ($logprimary ne "NULL")
{
    $setLogString="db2 update db cfg for $dbname using
logprimary $logprimary";
    $setLogs=1;
}
if ($logsecond ne "NULL")
{
    if ($setLogs != 0)
    {
        $setLogString.=" $sep ";
    }
    $setLogString="db2 update db cfg for $dbname using
logsecond $logsecond";
    $setLogs=1;
}
if ($logfilsiz ne "NULL")
{
    if ($setLogs != 0)
    {
        $setLogString.=" $sep ";
    }
    $setLogString="db2 update db cfg for $dbname using
logfilsiz $logfilsiz";
    $setLogs=1;
}
if ($setLogs != 0)
{
    $setLogString.=" $sep ";
}
$setLogString="db2 update db cfg for $dbname using
logbufsz 128";

```

```

&dodb_noconn("$setLogString",$all_in);

# setup the load configuration
&outtime("**** Setting LOAD configuration.");
if (($loadconfigfile eq "") || ($loadconfigfile eq "NULL"))
{
    &dodb_noconn("db2 update db cfg for $dbname using
buffpage $buffpage $sep \
    db2 update db cfg for $dbname using sortheap
$sortheap $sep \
    db2 update db cfg for $dbname using
num_iocleaners $ioclnrs $sep \
    db2 update db cfg for $dbname using num_ioservers
$ioservers $sep \
    db2 update db cfg for $dbname using util_heap_sz
$util_heap_sz $sep \
    db2 update db cfg for $dbname using chngpgs_thresh
$chngpgs",
    $all_in);
    &dodb_noconn("db2 update dbm cfg using sheapthres
$sheapthres",$once);
}
else
{
    &dodb2file_noconn("${ddlpath}${delim}$loadconfigfile",$all
_in);

    &dodb2file_noconn("${ddlpath}${delim}$loadDBMconfig",$o
nce);
}
&dodb_noconn("db2 terminate",$once);
$rc=system("db2stop");
if ($rc != 0)
{
    die "failure during db2stop after resetting for load config
rc = $rc \n";
}
$rc=system("db2start");
if ($rc != 0)
{
    die "failure during db2start rc = $rc \n";
}
} # end of "CREATE DATABASE" phase

if (($buildStage eq "ALL" ) || ($buildStage eq "CRTTBSP"
)) ||
( $buildStage eq "LOAD" ) ||
(( $buildStage eq "INDEX" ) && ( $early index eq "yes" ))
)
{
    # create the nodegroups is there is a file specified
    if ($nodegroupdef ne "NULL")
    {
        #run the create bufferpool ddl
        &outtime("**** Creating the nodegroups");

        &dodb2file($dbname,"$ddlpath${delim}$nodegroupdef",$on
ce);
    }
    # create the explain tables - these should go into
    userspace1 since no
    # other tablespaces exist
    if ($explainDDL ne "NULL")
    {
        $explnPathFile="$ddlpath${delim}$explainDDL";
    }
    else
    {

```



```

if ( $platform eq "ptx" )
{
    $home=$ENV{"HOME"};
    $sqlpath="$home${delim}sqllib";
}
if ( $platform ne "nt" )
{
    $sqlpath=~${delim}sqllib";
}
else
{
    $sqlpath=$ENV{"DB2PATH"};
}

$explnPathFile="$sqlpath${delim}misc${delim}EXPLAIN.
DDL";
}
&dodb_conn($dbname,
    "db2 -tvf $explnPathFile $sep \
    db2 alter table explain_instance locksize table
append on $sep \
    db2 alter table explain_statement locksize table
append on $sep \
    db2 alter table explain_argument locksize table
append on $sep \
    db2 alter table explain_object locksize table append
on $sep \
    db2 alter table explain_operator locksize table
append on $sep \
    db2 alter table explain_predicate locksize table
append on $sep \
    db2 alter table explain_stream locksize table
append on",
    $once);

if ( $buffpooldef ne "NULL" )
{
    #run the create bufferpool ddl
    &outtime("*** Creating the bufferpools");

&dodb2file($dbname,"$ddlpath${delim}$buffpooldef",$once);
}
# create the tablespaces
&outtime("*** Ready to start creating the tablespaces");
&dodb2file($dbname,"$ddlpath${delim}$tblspddl",$once);
# if we are in audit mode, then we must create the the
tablespaces and
# tables for the update functions and we must generate the
data for the
# update functions before we start timing the load. (All
activity
# on the database after the table creation is started and
before the performance
# tests are run must be included in load time
# NOTE: we do not have to do this if we are building the
qualification database
&outtime("*** Start of audited Load Time - starting to
create tables");

# create/populate the staging tables
if ( $stagingTbl ne "NULL" )
{
    # staging tables must be created for both test and
qualification database
    # but they do not need to be populated for the
qualification database

&dodb2file($dbname,"$ddlpath${delim}$stagingTbl",$once)
;

```

```

if ( $qual ne "QUAL" )
{
    if ( $preloadSampleUF ne "NULL" )
    {
        # preload the sample UF data for statistics
gathering
        $src = system ("perl
$ddlpath${delim}$preloadSampleUF");
    }
    if ( $deleteSampleUF ne "NULL" )
    {
        # delete the sample rows now that stats have been
gathered

&dodb2file($dbname,"$ddlpath${delim}$deleteSampleUF",
$once);
    }
}
&dodb2file($dbname,"$ddlpath${delim}$ddl",$once);

# update the locksize on the non-updated tables to be table
level locking
# update the tables for appendmode

if ( $appendOn eq "yes" )
{
    &dodb_conn($dbname,
        "db2 alter
table tpcd.nation locksize table $sep \
db2
alter table tpcd.region locksize table $sep \
db2
alter table tpcd.customer locksize table $sep \
db2
alter table tpcd.supplier locksize table $sep \
db2
alter table tpcd.part locksize table $sep \
db2
alter table tpcd.partsupp locksize table $sep \
db2
alter table tpcd.lineitem append on $sep \
db2
alter table tpcd.orders append on",
        $once);
    }
else
{
    &dodb_conn($dbname,
        "db2 alter
table tpcd.nation locksize table $sep \
db2
alter table tpcd.region locksize table $sep \
db2
alter table tpcd.customer locksize table $sep \
db2
alter table tpcd.supplier locksize table $sep \
db2
alter table tpcd.part locksize table $sep \
db2
alter table tpcd.partsupp locksize table",
        $once);
    }

if ( $mode eq "mpp" )
{
    #need parallel specific
    print "need to figure parallel specific creation of tmp\n";
}

```

```

    }
    mkdir("${delim}tmp${delim}${instance}",0777);
} # end of "CREATE TABLESPACE and TABLES" phase

if (( $buildStage eq "ALL" ) || ( $buildStage eq "CRTTBSP"
) ||
    ( $buildStage eq "LOAD" ) ||
    (( $buildStage eq "INDEX" ) && ( $earlyindex eq "yes" ))
)
{
    # do the load stage of the build, or if early index is
on do
    # the index creation also
    # setup the load configuration
    if ( $buildStage ne "ALL" )
    {
        # we're restarting a build so reapply
the load config
        &outtime("**** Setting LOAD
configuration.");
        if (( $loadconfigfile eq "" ) ||
( $loadconfigfile eq "NULL" ))
        {
            &dodb_noconn("db2
update db cfg for $dbname using buffpage $buffpage $sep \

            db2 update db cfg for $dbname using sortheap
$sortheap $sep \

            db2 update db cfg for $dbname using
num_iocleaners $ioclhrs $sep \

            db2 update db cfg for $dbname using
num_ioservers $ioservers $sep \

            db2 update db cfg for $dbname using util_heap_sz
$util_heap_sz $sep \

            db2 update db cfg for $dbname using
chnpggs_thresh $chnpggs",
                $all_ln);
            &dodb_noconn("db2
update dbm cfg using sheapthres $sheapthres", $once);
        }
        else
        {
            &dodb2file_noconn("${ddlpath}${delim}$loadconfigfile", $all
_ln);

            &dodb2file_noconn("${ddlpath}${delim}$loadDBMconfig", $o
nce);
        }
        &dodb_noconn("db2
terminate", $once);
        $src=system("db2stop");
        if ( $src != 0 )
        {
            die "failure during db2stop
after resetting for load config rc = $src \n";
        }
        $src=system("db2start");
        if ( $src != 0 )
        {
            die "failure during db2start
rc = $src \n";
        }
    }
}

```

```

# if earlyindex requested, create indexes
if ( $earlyindex eq "yes" )
{
    &outtime("**** Starting to create indexes");

&dodb2file($dbname, "${ddlpath}${delim}$indexddl", $once);
    &outtime("**** Create index completed");
}

# start the dbgen and load.....call the specific mode for
loading (uni,smp,mln)
if (( $mode eq "uni" ) || ( $mode eq "smp" ))
{
    &outtime("**** Starting the load");
    # call the appropriate dbgen/load for uni/smp
    if (( $loadscript eq "NULL" ) || ( $loadscript eq "" ))
    {
        $src = system("perl genloaduni $qual");
        if ( $src != 0 )
        {
            die "genloaduni failed rc = $src\n";
        }
    }
    else
    {
        &dodb2file_noconn("${ddlpath}${delim}$loadscript", $once);
    }
}
elseif (( $mode eq "mln" ) || ( $mode eq "mpp" ))
{
    &outtime("**** Starting the load");
    # call the appropriate dbgen/split(sort)/load for
mln/mpp

    if (( $loadscript eq "NULL" ) || ( $loadscript eq "" ))
    {
        $src = system("perl genloadmpp $qual");
        if ( $src != 0 )
        {
            die "genloadmpp failed rc = $src\n";
        }
    }
    else
    {
        $src =
&dodb2file_noconn("${ddlpath}${delim}$loadscript");
        # $src =
&dodb2file_noconn("${ddlpath}${delim}$loadscript $sf");
    }

    if ( $src != 0 )
    {
        die "doload for $dbname failed rc = $src. Script is
$ddlpath${delim}$loadscript\n";
    }
}
else
{
    die "TPCD_MODE not set to one of uni, smp, mln or
mpp\n";
}

&outtime("**** Load complete");

# verify that the audit directory exists
$filename="$auditDir";
if (-e $filename)

```

```

{
# set up the $auditDir/$dbname.$user.update.pair.num
file
# to start at update pair 1

$filename="$auditDir${delim}$dbname.$user.update.pair.num";
}
else
{
mkdir ("$auditDir", 0775) || die "cannot mkdir
$auditDir";
}
print "setting update pair num to 1\n";
system("echo 1 > $filename");

} # end all and load stage (and create index if early index
was specified

if (( $buildStage eq "ALL" ) || ( $buildStage eq "CRTTBSP"
) ) ||
( $buildStage eq "LOAD" ) ||
( $buildStage eq "INDEX" ) )
{
if ( $buildStage eq "INDEX" )
{ # we're restarting a build so reapply the load config
&outtime("**** Setting LOAD configuration.");
if (( $loadconfigfile eq "" ) || ( $loadconfigfile eq "NULL" ))
{
&dodb_noconn("db2 update db cfg for $dbname using
buffpage $buffpage $sep \
db2 update db cfg for $dbname using sorheap
$sorheap $sep \
db2 update db cfg for $dbname using
num_iocleaners $ioclnrs $sep \
db2 update db cfg for $dbname using num_ioservers
$ioservers $sep \
db2 update db cfg for $dbname using util_heap_sz
$util_heap_sz $sep \
db2 update db cfg for $dbname using chngpgs_thresh
$chngpgs",
$all_ln);
&dodb_noconn("db2 update dbm cfg using sheapthres
$sheapthres", $once);
}
else
{
&dodb2file_noconn("$ddlpath${delim}$loadconfigfile", $all
_ln);

&dodb2file_noconn("$ddlpath${delim}$loadDBMconfig", $o
nce);
}
&dodb_noconn("db2 terminate", $once);
$rc=system("db2stop");
if ( $rc != 0 )
{
die "failure during db2stop after resetting for load config
rc = $rc \n";
}
$rc=system("db2start");
if ( $rc != 0 )
{
die "failure during db2start rc = $rc \n";
}
}
# if indexes haven't been created, do so now
if ( $earlyindex ne "yes" )
{

```

```

&outtime("**** Create index started");
# added on 5/9
&dodb_conn($dbname,
"db2 alter table tpcd.lineitem append off $sep \
db2 alter table tpcd.orders append off",
$once);

&dodb2file($dbname, "$ddlpath${delim}$indexddl", $once);

# &dodb_conn($dbname,
# "db2 alter table tpcd.lineitem append on $sep \
# db2 alter table tpcd.orders append on",
# $once);

&outtime("**** Create index completed");
}
if ( $extraindex ne "no" )
{
# use this additional file for indexes
&outtime("**** Create index (part 2) started");

&dodb2file($dbname, "$ddlpath${delim}$extraindex", $once)
;
&outtime("**** Create index (part 2) completed");
}

} # end create/load/index phase of the build

if (( $buildStage eq "ALL" ) || ( $buildStage eq "CRTTBSP"
) ) ||
( $buildStage eq "LOAD" ) ||
( $buildStage eq "INDEX" ) || ( $buildStage eq
"RUNSTATS" ) )
{
if ( $buildStage eq "RUNSTATS" )
{
# we're restarting a build so reapply
the load config
&outtime("**** Setting LOAD
configuration.");
if (( $loadconfigfile eq "" ) ||
( $loadconfigfile eq "NULL" ))
{
&dodb_noconn("db2
update db cfg for $dbname using buffpage $buffpage $sep \

db2 update db cfg for $dbname using sorheap
$sorheap $sep \

db2 update db cfg for $dbname using
num_iocleaners $ioclnrs $sep \

db2 update db cfg for $dbname using
num_ioservers $ioservers $sep \

db2 update db cfg for $dbname using util_heap_sz
$util_heap_sz $sep \

db2 update db cfg for $dbname using
chngpgs_thresh $chngpgs",
$all_ln);
&dodb_noconn("db2
update dbm cfg using sheapthres $sheapthres", $once);
}
else
{
&dodb2file_noconn("$ddlpath${delim}$loadconf
igfile", $all_ln);

```

```

        &dodb2file_noconn("$ddlpath${delim}$loadDB
Mconfig",$once);
    }
    &dodb_noconn("db2
terminate",$once);
        $rc=system("db2stop");
        if ( $rc != 0 )
        {
            die "failure during db2stop
after resetting for load config rc = $rc \n";
        }
        $rc=system("db2start");
        if ( $rc != 0 )
        {
            die "failure during db2start
rc = $rc \n";
        }
    }
    # if statistics not gathered on the load, run runstats (we
have to run the
    # stats at the same time as the index creation whether it be
both during load,
    # or after load)
    # We need to run the runstats as well if we have specified
an extra index file
    # for "after load" indexes
    if (( $loadstats eq "no" ) || ( $earlyindex eq "no" ) || (
$extraindex ne "no" ))
    {
        # if loadstats not gathered, then index stats not gathered
either.
        &outtime("**** Runstats started");

        if ( $runstatShort ne "NULL" )
        {
            # we've specified a second runstats file...This runstats
file should do
            # runstats for all table except lineitem. The lineitem
runstats command
            # should be left in the main runstats file.
            if ( $platform eq "aix" || $platform eq "sun" ||
$platform eq "ptx" )
            {
                print "runstats from $ddlpath${delim}$runstatShort
running now\n";
                $rc = system("db2 -tvf
\"$ddlpath${delim}$runstatShort\" >
\"$auditDir${delim}tools${delim}runstatShort.out\" & ");
                print "rc from runstatShort=$rc\n";
            }
            elsif ( $platform eq "nt" )
            {
                system("start db2 -tvf
$ddlpath${delim}$runstatShort");
            }
            else
            {
                print "Don't know how to start in background on
$platform platform\n";
                print "therefore running runstats serially \n";
            }
        }
        &dodb2file($dbname,"$ddlpath${delim}$runstatShort",$onc
e);
    }
}
# run the full runstats, or the remainder of what wasn't
put into the short
# runstats file. You should be sure that this runstats will
take longer

```

```

    # than the short runstats that is running in the
background, otherwise
    # setting the config will happen before this is done.

    &dodb2file($dbname,"$ddlpath${delim}$runstats",$once);
    &outtime("**** Runstats completed");
}
} # end build phase all/load/index/runstats

# add the RI
if ( $addRI ne "NULL" )
{
    &outtime("**** Adding RI constraints started");
    &dodb2file($dbname,"$ddlpath${delim}$addRI",$once);
    &outtime("**** Adding RI constraints completed");
}

#add the AST if it has been requested
if ( $astFile ne "NULL" )
{
    &outtime("**** Adding AST started");
    &dodb2file($dbname,"$ddlpath${delim}$astFile",$once);
    &outtime("**** Adding AST completed");
}

# check tbsp info
&dodb_conn($dbname,"db2 list tablespaces show
detail",$once);

# set the configuration
&outtime("**** Set Configuration started");
&outtime("**** Setting degree of parallelism");
&dodb_noconn("db2 update database configuration for
$dbname using dft_degree $smpdegree",$all_in);
&dodb_noconn("db2 update database manager configuration
using max_querydegree $smpdegree",$once);

&dodb2file_noconn("$ddlpath${delim}$configfile",$all_in);
&dodb2file_noconn("$ddlpath${delim}$dbmconfig",$once);

if ( $agentpri ne "NULL" )
{
    &dodb_noconn("db2 update dbm cfg using AGENTPRI
$agentpri",$once);
}

# set the db2 environment variables for running the
benchmark
if ( $setScript ne "NULL" )
{
    if ( $platform eq "aix" || $platform eq "sun" || $platform eq
"ptx" )
    {
        $ret=system("$ddlpath${delim}$setScript");
    }
    elsif ( $platform eq "nt" )
    {
        if (($mode eq "uni" ) || ($mode eq "smp" ))
        {
            $ret = system("$ddlpath${delim}$setScript");
        }
        else
        {
            $ret = system(" db2_all \"
call $ddlpath${delim}$setScript\" ");
        }
    }
    if ( $ret != 0 )

```

```

    {
        die "failure setting runtime db2set parms from
$setScript `n";
    }
}
# if logging is enabled, we must take a backup of the
database
if ( $log eq "yes" )
{
    &dodb_noconn("db2 update database configuration for
$dbname using LOGRETAIN yes",$all_ln);
    print "\n NOTE: DO NOT RESET THE DATABASE
CONFIGURATION or you will lose logretain\n";
    # force a connection to the database on all nodes to ensure
LOGRETAIN is
    # set in effect.
    # An error message will print to screen if the logretain is
set properly
    # i.e. SQL116N A connection to or activation of database
<database name>
    # cannot be made.
    # This is expected and the lack of this error message
should be seen as an
    # error in the database build.
    &dodb_conn($dbname,"db2 \"select count(*) from
tpcd.region\"", $all_ln);

    if ( $qual eq "QUAL" )
    {
        &outtime("**** Starting the backup");

        if (( $mode eq "mln" ) || ( $mode eq "mpp"))
        {
            # must back up catalog node first...assume node 00
            $rc=system("db2_all \\\}<<+000< db2 \"backup
database $dbname to $backupdir without prompting' \"");
            if ( $rc != 0 )
            {
                die "backup of catalog node failed rc = $rc\n";
            }
            # back up remaining nodes
            $rc=system("db2_all \\\}<<-000< db2 backup
database $dbname to $backupdir without prompting' \"");
            if ( $rc != 0 )
            {
                die "backup of remaining nodes failed rc = $rc\n";
            }
        }
        else
        {
            &dodb_noconn("db2 backup database $dbname to
$backupdir", $once);
        }
        &outtime("**** Finished the backup");
    }
    else
    {
        # This is the test database. Clause 3.1.4 states that "the
test sponsor is
        # not required to make or have backup copies of the test
database; however
        # all other mechanisms that guarantee durability of the
qualification
        # database must be enabled in the same way for the test
database".
        # According to this clause we do need to keep the
backup of the database.
        # &dodb_noconn("db2dart $dbname /CHST /WHAT
DBBP OFF", $all_ln);
    }
}

```

```

        system("db2start");
        &dodb_conn($dbname,"db2 \"update db cfg for
tpcd using util_heap_sz 200000\"", $all_ln);
        system("db2stop");

        &outtime("**** Starting the backup");
        $rc = system("backup_tpcd.bat");
        # ($rc == 0) | die "Test database
backup failed, rc = $rc.\n";
        &outtime("**** Finished the backup");

        system("db2start");
        &dodb_conn($dbname,"db2 \"update db cfg for
tpcd using util_heap_sz 40000\"", $all_ln);
    }
}

# stop and restart the database to get config parms recognized
$rc=system("db2stop");
# if ( $rc != 0 )
#{
#   die "failure during db2stop rc = $rc\n";
#}
$rc=system("db2start");
if ( $rc != 0 )
{
    die "failure during db2start rc = $rc\n";
}

&outtime("**** Set Configuration completed");
&outtime("**** End of audited Load Time");

#create generated seeds
if ( $genSeed ne "no" )
{
    $rc = system("perl createmseedme.pl 1000");
    if ( $rc != 0 )
    {
        warn "createmseedme failed\n";
    }
}

$rc = system("perl buildtpcdbatch $qual");
if ( $rc != 0 )
{
    die "buildtpcdbatch failed rc=$rc\n";
}

if ( $RealAudit eq "yes" )
{
    # if we are in real audit mode then we have to do a number
of things
    # set up the audit directory structure and the run directory
structure
    # so that once we have completed the buildtpcd, we are
ready to run.
    # first remove any old "update pair number" file so we
won't get prompted
    # doing setupDir
    &rm("$auditDir${delim}tools${delim}tpcd.runsetup");
    system("perl setupRun");
    # before we stop the database for the final time
    # if we are in the real audit mode then run dbtables and
dbcheck before
    # we print out the final notice that we are ready to run the
performance tests
    # if we are building the qualification database then we will
bind to both
    # the dbname database and the qualification database
    if ( $qual eq "QUAL" )

```

```

    {
        $verifyType="q";
    }
    else
    {
        $verifyType="t";
    }
    system("perl tablesdb $verifyType");

&dodb2file($dbname,"$auditDir${delim}tools${delim}first1
0rows.sql",$once);
}
# stop, restart and activate the database, if necessary

#Create Catalog info
$rc = system("perl catinfo.pl b");

if ( $rc != 0 )
{
    warn "catinfo failed!!! rc = $rc\n";
}

$rc=system("db2stop");
if ( $rc != 0 )
{
    die "failure during db2stop rc = $rc \n";
}

&outtime("**** Ready to run the performance tests once the
dbm has restarted");

if ( $RealAudit ne "yes" )
{
    # if we are not in a real audit, then we can restart the
    database manager
    # if we are in a real audit, then we don't want to do this
    until the
    # power test starts
    $rc=system("db2start");
    if ( $rc != 0 )
    {
        die "failure during db2start rc = $rc \n";
    }
    if ( $activate eq "yes" )
    {
        &dodb_noconn("activate database $dbname",$once);
    }
}

# finished creating the database
&outtime("**** Finished creating the database");

1;

```

bkuptestDB.bat

```

rd q:\backup /s /q
rd h:\backup /s /q
rd i:\backup /s /q
rd j:\backup /s /q
md g:\backup
md h:\backup
md i:\backup
md j:\backup

time < xxx
db2start

```

```

set db2node=0
db2 backup database tpcd to h:\backup WITH 16 BUFFERS
PARALLELISM 4 without prompting
time < xxx
rem End of backup node 0
db2stop

```

```

db2start
set db2node=1
db2 backup database tpcd to i:\backup WITH 16 BUFFERS
PARALLELISM 4 without prompting
time < xxx
rem End of backup node 1
db2stop
time < xxx

```

```

db2start
set db2node=2
db2 backup database tpcd to j:\backup WITH 16 BUFFERS
PARALLELISM 4 without prompting
time < xxx
rem End of backup node 2
db2stop
time < xxx

```

```

db2start
set db2node=3
db2 backup database tpcd to g:\backup WITH 16 BUFFERS
PARALLELISM 4 without prompting
time < xxx
rem End of backup node 3
db2stop
time < xxx

```

create_bufferpools

```

alter bufferpool IBMDEFAULTBP size 1000;
create bufferpool BP16K size -1 pagesize 16K;

```

create_indexes

```

values(current timestamp);
CREATE UNIQUE INDEX "TPCD"."R_RK" ON "TPCD"
"."REGION"
    ("R_REGIONKEY" ASC)
    PCTFREE 0 ;
commit work;

```

```

values(current timestamp);
CREATE UNIQUE INDEX "TPCD"."N_NK" ON "TPCD"
"."NATION"
    ("N_NATIONKEY" ASC)
    PCTFREE 0 ;
commit work;

```

```

values(current timestamp);
CREATE INDEX "TPCD"."N_RK" ON "TPCD"
"."NATION"
    ("N_REGIONKEY" ASC)
    PCTFREE 0 ;
commit work;

```

```

values(current timestamp);
CREATE UNIQUE INDEX "TPCD"."S_SK" ON "TPCD"
"."SUPPLIER"
    ("S_SUPPKEY" ASC)

```

```

PCTFREE 0 ;
commit work;

values(current timestamp);
CREATE INDEX "TPCD"."S_NK" ON "TPCD"
"."SUPPLIER"
("S_NATIONKEY" ASC)
PCTFREE 0 ;
commit work;
values(current timestamp);

values(current timestamp);
CREATE UNIQUE INDEX "TPCD"."P_PK" ON "TPCD"
"."PART"
("P_PARTKEY" ASC)
PCTFREE 0 ;
commit work;
values(current timestamp);

values(current timestamp);
CREATE INDEX "TPCD"."PS_SK" ON "TPCD"
"."PARTSUPP"
("PS_SUPPKEY" ASC)
PCTFREE 0 ;
commit work;

values(current timestamp);
CREATE INDEX "TPCD"."PS_PK" ON "TPCD"
"."PARTSUPP"
("PS_PARTKEY" ASC)
PCTFREE 0 ;
commit work;

values(current timestamp);
CREATE UNIQUE INDEX "TPCD"."PS_PSK" ON
"TPCD"."PARTSUPP"
("PS_PARTKEY" ASC,
"PS_SUPPKEY" ASC)
PCTFREE 0 ;
commit work;

values(current timestamp);
CREATE UNIQUE INDEX "TPCD"."PS_SKPK" ON
"TPCD"."PARTSUPP"
("PS_SUPPKEY" ASC,
"PS_PARTKEY" ASC)
PCTFREE 0 ;
commit work;

values(current timestamp);
CREATE UNIQUE INDEX "TPCD"."C_CK" ON "TPCD"
"."CUSTOMER"
("C_CUSTKEY" ASC)
PCTFREE 0 ;
commit work;

values(current timestamp);
CREATE INDEX "TPCD"."C_NK" ON "TPCD"
"."CUSTOMER"
("C_NATIONKEY" ASC)
PCTFREE 0 ;
commit work;

values(current timestamp);
CREATE UNIQUE INDEX "TPCD"."O_OK" ON "TPCD"
"."ORDERS"
("O_ORDERKEY" ASC)
PCTFREE 6 ;

```

```

commit work;

values(current timestamp);
create unique index tpcd.l_ok_ln on tpcd.lineitem
(l_orderkey, l_linenumber) pctfree 3;
commit work;
values(current timestamp);

alter table tpcd.orders add primary key(o_orderkey);
alter table tpcd.lineitem add primary
key(l_orderkey, l_linenumber);
commit work;

```

create_nodegroups

```

create nodegroup catalog_node on node (0);
create nodegroup all_nodes;

```

create_tables

```

CREATE TABLE TPCD.NATION ( N_NATIONKEY
INTEGER NOT NULL,
N_NAME CHAR(25) NOT NULL,
N_REGIONKEY INTEGER NOT NULL,
N_COMMENT VARCHAR(152) NOT
NULL WITH DEFAULT)
IN SMALL_TABLE;

```

```

CREATE TABLE TPCD.REGION ( R_REGIONKEY
INTEGER NOT NULL,
R_NAME CHAR(25) NOT NULL,
R_COMMENT VARCHAR(152) NOT
NULL WITH DEFAULT)
IN SMALL_TABLE;

```

```

CREATE TABLE TPCD.PART ( P_PARTKEY
INTEGER NOT NULL,
P_NAME VARCHAR(55) NOT NULL,
P_MFGR CHAR(25) NOT NULL,
P_BRAND CHAR(10) NOT NULL,
P_TYPE VARCHAR(25) NOT NULL,
P_SIZE INTEGER NOT NULL,
P_CONTAINER CHAR(10) NOT NULL,
P_RETAILPRICE FLOAT NOT NULL,
P_COMMENT VARCHAR(23) NOT
NULL WITH DEFAULT)
IN OTHER_TABLE
INDEX IN OTHER_INDEX
PARTITIONING KEY(P_PARTKEY) USING
HASHING;

```

```

CREATE TABLE TPCD.SUPPLIER ( S_SUPPKEY
INTEGER NOT NULL,
S_NAME CHAR(25) NOT NULL,
S_ADDRESS VARCHAR(40) NOT
NULL,
S_NATIONKEY INTEGER NOT NULL,
S_PHONE CHAR(15) NOT NULL,
S_ACCT BAL FLOAT NOT NULL,
S_COMMENT VARCHAR(101) NOT
NULL WITH DEFAULT)
IN OTHER_TABLE
INDEX IN OTHER_INDEX
PARTITIONING KEY(S_SUPPKEY) USING
HASHING
ORGANIZE BY (

```

```

        ("S_NATIONKEY" ));

CREATE TABLE TPCD.PARTSUPP ( PS_PARTKEY
INTEGER NOT NULL,
        PS_SUPPKEY  INTEGER NOT NULL,
        PS_AVAILQTY  INTEGER NOT
NULL,
        PS_SUPPLYCOST  FLOAT  NOT
NULL,
        PS_COMMENT   VARCHAR(199) NOT
NULL WITH DEFAULT)
        IN OTHER_TABLE
        INDEX IN OTHER_INDEX
        PARTITIONING KEY(PS_PARTKEY) USING
HASHING;

CREATE TABLE TPCD.CUSTOMER ( C_CUSTKEY
INTEGER NOT NULL,
        C_NAME      CHAR(25) NOT NULL,
        C_ADDRESS   VARCHAR(40) NOT
NULL,
        C_NATIONKEY  INTEGER NOT
NULL,
        C_PHONE     CHAR(15) NOT NULL,
        C_ACCTBAL   FLOAT  NOT NULL,
        C_MKTSEGMENT CHAR(10) NOT
NULL,
        C_COMMENT   VARCHAR(117) NOT
NULL WITH DEFAULT)
        IN OTHER_TABLE
        INDEX IN OTHER_INDEX
        PARTITIONING KEY(C_CUSTKEY) USING
HASHING
        ORGANIZE BY (
        ("C_NATIONKEY" ));

CREATE TABLE TPCD.ORDERS ( O_ORDERKEY
INTEGER NOT NULL,
        O_CUSTKEY   INTEGER NOT NULL,
        O_ORDERSTATUS  CHAR(1) NOT
NULL,
        O_TOTALPRICE  FLOAT NOT NULL,
        O_ORDERDATE   DATE NOT NULL,
        O_ORDERPRIORITY CHAR(15) NOT
NULL,
        O_CLERK      CHAR(15) NOT NULL,
        O_SHIPPRIORITY  INTEGER NOT
NULL,
        O_COMMENT   VARCHAR(79) NOT
NULL WITH DEFAULT
--        PRIMARY KEY (O_ORDERKEY)
        )
        IN OTHER_TABLE
        INDEX IN OTHER_INDEX
        PARTITIONING KEY(O_ORDERKEY) USING
HASHING
        ORGANIZE BY (( O_ORDERDATE ));

CREATE TABLE TPCD.LINEITEM ( L_ORDERKEY
INTEGER NOT NULL,
        L_PARTKEY   INTEGER NOT NULL,
        L_SUPPKEY   INTEGER NOT NULL,
        L_LINENUMBER  INTEGER NOT
NULL,
        L_QUANTITY   FLOAT NOT NULL,
        L_EXTENDEDPRI  FLOAT NOT
NULL,
        L_DISCOUNT  FLOAT NOT NULL,
        L_TAX        FLOAT NOT NULL,

```

```

        L_RETURNFLAG  CHAR(1) NOT
NULL,
        L_LINESTATUS  CHAR(1) NOT NULL,
        L_SHIPDATE   DATE NOT NULL,
        L_COMMITDATE  DATE NOT NULL,
        L_RECEIPTDATE DATE NOT NULL,
        L_SHIPINSTRUCT CHAR(25) NOT
NULL,
        L_SHIPMODE   CHAR(10) NOT NULL,
        L_COMMENT    VARCHAR(44) NOT
NULL WITH DEFAULT
--        PRIMARY KEY (L_ORDERKEY,
L_LINENUMBER)
        )
        IN LINEITEM_TABLE
        INDEX IN LINEITEM_INDEX
        PARTITIONING KEY(L_ORDERKEY) USING
HASHING
        ORGANIZE BY ( (L_SHIPDATE) );

COMMIT WORK;

```

create_ tablespaces

```

CREATE REGULAR TABLESPACE SMALL_TABLE
        IN NODEGROUP CATALOG_NODE
        MANAGED BY SYSTEM
        USING ('D:\HOME\DB2TPCH\SMALL_TABLE')
        ON NODE (0)
        OVERHEAD 5.3 TRANSFERRATE 0.5;

CREATE REGULAR TABLESPACE LINEITEM_TABLE
        PAGESIZE 16K
        MANAGED BY DATABASE
        USING (
        DEVICE 'D:\MP\Disk000\Partition1' 1024M,
        DEVICE 'D:\MP\Disk001\Partition1' 1024M,
        DEVICE 'D:\MP\Disk002\Partition1' 1024M,
        DEVICE 'D:\MP\Disk003\Partition1' 1024M,
        DEVICE 'D:\MP\Disk004\Partition1' 1024M,
        DEVICE 'D:\MP\Disk005\Partition1' 1024M,
        DEVICE 'D:\MP\Disk006\Partition1' 1024M,
        DEVICE 'D:\MP\Disk007\Partition1' 1024M,
        DEVICE 'D:\MP\Disk008\Partition1' 1024M,
        DEVICE 'D:\MP\Disk009\Partition1' 1024M,
        DEVICE 'D:\MP\Disk010\Partition1' 1024M,
        DEVICE 'D:\MP\Disk011\Partition1' 1024M,
        DEVICE 'D:\MP\Disk012\Partition1' 1024M,
        DEVICE 'D:\MP\Disk014\Partition1' 1024M,
        DEVICE 'D:\MP\Disk015\Partition1' 1024M,
        DEVICE 'D:\MP\Disk016\Partition1' 1024M,
        DEVICE 'D:\MP\Disk017\Partition1' 1024M,
        DEVICE 'D:\MP\Disk018\Partition1' 1024M,
        DEVICE 'D:\MP\Disk019\Partition1' 1024M,
        DEVICE 'D:\MP\Disk020\Partition1' 1024M,
        DEVICE 'D:\MP\Disk021\Partition1' 1024M,
        DEVICE 'D:\MP\Disk022\Partition1' 1024M,
        DEVICE 'D:\MP\Disk023\Partition1' 1024M,
        DEVICE 'D:\MP\Disk024\Partition1' 1024M,
        DEVICE 'D:\MP\Disk025\Partition1' 1024M,
        DEVICE 'D:\MP\Disk026\Partition1' 1024M)
        ON NODE (0)
        USING (
        DEVICE 'D:\MP\Disk028\Partition1' 1024M,
        DEVICE 'D:\MP\Disk029\Partition1' 1024M,
        DEVICE 'D:\MP\Disk030\Partition1' 1024M,
        DEVICE 'D:\MP\Disk031\Partition1' 1024M,
        DEVICE 'D:\MP\Disk032\Partition1' 1024M,

```



```

DEVICE 'D:\MP\Disk053\Partition2' 1024M,
DEVICE 'D:\MP\Disk054\Partition2' 1024M)
ON NODE (1)
USING (
  DEVICE 'D:\MP\Disk056\Partition2' 1024M,
  DEVICE 'D:\MP\Disk057\Partition2' 1024M,
  DEVICE 'D:\MP\Disk058\Partition2' 1024M,
  DEVICE 'D:\MP\Disk059\Partition2' 1024M,
  DEVICE 'D:\MP\Disk060\Partition2' 1024M,
  DEVICE 'D:\MP\Disk061\Partition2' 1024M,
  DEVICE 'D:\MP\Disk062\Partition2' 1024M,
  DEVICE 'D:\MP\Disk063\Partition2' 1024M,
  DEVICE 'D:\MP\Disk064\Partition2' 1024M,
  DEVICE 'D:\MP\Disk065\Partition2' 1024M,
  DEVICE 'D:\MP\Disk066\Partition2' 1024M,
  DEVICE 'D:\MP\Disk067\Partition2' 1024M,
  DEVICE 'D:\MP\Disk068\Partition2' 1024M,
  DEVICE 'D:\MP\Disk070\Partition2' 1024M,
  DEVICE 'D:\MP\Disk071\Partition2' 1024M,
  DEVICE 'D:\MP\Disk072\Partition2' 1024M,
  DEVICE 'D:\MP\Disk073\Partition2' 1024M,
  DEVICE 'D:\MP\Disk074\Partition2' 1024M,
  DEVICE 'D:\MP\Disk075\Partition2' 1024M,
  DEVICE 'D:\MP\Disk076\Partition2' 1024M,
  DEVICE 'D:\MP\Disk077\Partition2' 1024M,
  DEVICE 'D:\MP\Disk078\Partition2' 1024M,
  DEVICE 'D:\MP\Disk079\Partition2' 1024M,
  DEVICE 'D:\MP\Disk080\Partition2' 1024M,
  DEVICE 'D:\MP\Disk081\Partition2' 1024M,
  DEVICE 'D:\MP\Disk082\Partition2' 1024M)
ON NODE (2)
USING (
  DEVICE 'D:\MP\Disk084\Partition2' 1024M,
  DEVICE 'D:\MP\Disk085\Partition2' 1024M,
  DEVICE 'D:\MP\Disk086\Partition2' 1024M,
  DEVICE 'D:\MP\Disk087\Partition2' 1024M,
  DEVICE 'D:\MP\Disk088\Partition2' 1024M,
  DEVICE 'D:\MP\Disk089\Partition2' 1024M,
  DEVICE 'D:\MP\Disk090\Partition2' 1024M,
  DEVICE 'D:\MP\Disk091\Partition2' 1024M,
  DEVICE 'D:\MP\Disk092\Partition2' 1024M,
  DEVICE 'D:\MP\Disk093\Partition2' 1024M,
  DEVICE 'D:\MP\Disk094\Partition2' 1024M,
  DEVICE 'D:\MP\Disk095\Partition2' 1024M,
  DEVICE 'D:\MP\Disk096\Partition2' 1024M,
  DEVICE 'D:\MP\Disk098\Partition2' 1024M,
  DEVICE 'D:\MP\Disk099\Partition2' 1024M,
  DEVICE 'D:\MP\Disk100\Partition2' 1024M,
  DEVICE 'D:\MP\Disk101\Partition2' 1024M,
  DEVICE 'D:\MP\Disk102\Partition2' 1024M,
  DEVICE 'D:\MP\Disk103\Partition2' 1024M,
  DEVICE 'D:\MP\Disk104\Partition2' 1024M,
  DEVICE 'D:\MP\Disk105\Partition2' 1024M,
  DEVICE 'D:\MP\Disk106\Partition2' 1024M,
  DEVICE 'D:\MP\Disk107\Partition2' 1024M,
  DEVICE 'D:\MP\Disk108\Partition2' 1024M,
  DEVICE 'D:\MP\Disk109\Partition2' 1024M,
  DEVICE 'D:\MP\Disk110\Partition2' 1024M)
ON NODE (3)
BUFFERPOOL BP16K
EXTENTSIZ 16
OVERHEAD 0.1
PREFETCHSIZE 2240
TRANSFERRATE 0.5;

CREATE REGULAR TABLESPACE OTHER_TABLE
  PAGESIZE 16K
  MANAGED BY DATABASE
  USING (
    DEVICE 'D:\MP\Disk000\Partition3' 1024M,

```

```

  DEVICE 'D:\MP\Disk001\Partition3' 1024M,
  DEVICE 'D:\MP\Disk002\Partition3' 1024M,
  DEVICE 'D:\MP\Disk003\Partition3' 1024M,
  DEVICE 'D:\MP\Disk004\Partition3' 1024M,
  DEVICE 'D:\MP\Disk005\Partition3' 1024M,
  DEVICE 'D:\MP\Disk006\Partition3' 1024M,
  DEVICE 'D:\MP\Disk007\Partition3' 1024M,
  DEVICE 'D:\MP\Disk008\Partition3' 1024M,
  DEVICE 'D:\MP\Disk009\Partition3' 1024M,
  DEVICE 'D:\MP\Disk010\Partition3' 1024M,
  DEVICE 'D:\MP\Disk011\Partition3' 1024M,
  DEVICE 'D:\MP\Disk012\Partition3' 1024M,
  DEVICE 'D:\MP\Disk014\Partition3' 1024M,
  DEVICE 'D:\MP\Disk015\Partition3' 1024M,
  DEVICE 'D:\MP\Disk016\Partition3' 1024M,
  DEVICE 'D:\MP\Disk017\Partition3' 1024M,
  DEVICE 'D:\MP\Disk018\Partition3' 1024M,
  DEVICE 'D:\MP\Disk019\Partition3' 1024M,
  DEVICE 'D:\MP\Disk020\Partition3' 1024M,
  DEVICE 'D:\MP\Disk021\Partition3' 1024M,
  DEVICE 'D:\MP\Disk022\Partition3' 1024M,
  DEVICE 'D:\MP\Disk023\Partition3' 1024M,
  DEVICE 'D:\MP\Disk024\Partition3' 1024M,
  DEVICE 'D:\MP\Disk025\Partition3' 1024M,
  DEVICE 'D:\MP\Disk026\Partition3' 1024M)
ON NODE (0)
USING (
  DEVICE 'D:\MP\Disk028\Partition3' 1024M,
  DEVICE 'D:\MP\Disk029\Partition3' 1024M,
  DEVICE 'D:\MP\Disk030\Partition3' 1024M,
  DEVICE 'D:\MP\Disk031\Partition3' 1024M,
  DEVICE 'D:\MP\Disk032\Partition3' 1024M,
  DEVICE 'D:\MP\Disk033\Partition3' 1024M,
  DEVICE 'D:\MP\Disk034\Partition3' 1024M,
  DEVICE 'D:\MP\Disk035\Partition3' 1024M,
  DEVICE 'D:\MP\Disk036\Partition3' 1024M,
  DEVICE 'D:\MP\Disk037\Partition3' 1024M,
  DEVICE 'D:\MP\Disk038\Partition3' 1024M,
  DEVICE 'D:\MP\Disk039\Partition3' 1024M,
  DEVICE 'D:\MP\Disk040\Partition3' 1024M,
  DEVICE 'D:\MP\Disk042\Partition3' 1024M,
  DEVICE 'D:\MP\Disk043\Partition3' 1024M,
  DEVICE 'D:\MP\Disk044\Partition3' 1024M,
  DEVICE 'D:\MP\Disk045\Partition3' 1024M,
  DEVICE 'D:\MP\Disk046\Partition3' 1024M,
  DEVICE 'D:\MP\Disk047\Partition3' 1024M,
  DEVICE 'D:\MP\Disk048\Partition3' 1024M,
  DEVICE 'D:\MP\Disk049\Partition3' 1024M,
  DEVICE 'D:\MP\Disk050\Partition3' 1024M,
  DEVICE 'D:\MP\Disk051\Partition3' 1024M,
  DEVICE 'D:\MP\Disk052\Partition3' 1024M,
  DEVICE 'D:\MP\Disk053\Partition3' 1024M,
  DEVICE 'D:\MP\Disk054\Partition3' 1024M)
ON NODE (1)
USING (
  DEVICE 'D:\MP\Disk056\Partition3' 1024M,
  DEVICE 'D:\MP\Disk057\Partition3' 1024M,
  DEVICE 'D:\MP\Disk058\Partition3' 1024M,
  DEVICE 'D:\MP\Disk059\Partition3' 1024M,
  DEVICE 'D:\MP\Disk060\Partition3' 1024M,
  DEVICE 'D:\MP\Disk061\Partition3' 1024M,
  DEVICE 'D:\MP\Disk062\Partition3' 1024M,
  DEVICE 'D:\MP\Disk063\Partition3' 1024M,
  DEVICE 'D:\MP\Disk064\Partition3' 1024M,
  DEVICE 'D:\MP\Disk065\Partition3' 1024M,
  DEVICE 'D:\MP\Disk066\Partition3' 1024M,
  DEVICE 'D:\MP\Disk067\Partition3' 1024M,
  DEVICE 'D:\MP\Disk068\Partition3' 1024M,
  DEVICE 'D:\MP\Disk070\Partition3' 1024M,
  DEVICE 'D:\MP\Disk071\Partition3' 1024M,

```

```

DEVICE 'D:\MP\Disk072\Partition3' 1024M,
DEVICE 'D:\MP\Disk073\Partition3' 1024M,
DEVICE 'D:\MP\Disk074\Partition3' 1024M,
DEVICE 'D:\MP\Disk075\Partition3' 1024M,
DEVICE 'D:\MP\Disk076\Partition3' 1024M,
DEVICE 'D:\MP\Disk077\Partition3' 1024M,
DEVICE 'D:\MP\Disk078\Partition3' 1024M,
DEVICE 'D:\MP\Disk079\Partition3' 1024M,
DEVICE 'D:\MP\Disk080\Partition3' 1024M,
DEVICE 'D:\MP\Disk081\Partition3' 1024M,
DEVICE 'D:\MP\Disk082\Partition3' 1024M)
ON NODE (2)
USING (
  DEVICE 'D:\MP\Disk084\Partition3' 1024M,
  DEVICE 'D:\MP\Disk085\Partition3' 1024M,
  DEVICE 'D:\MP\Disk086\Partition3' 1024M,
  DEVICE 'D:\MP\Disk087\Partition3' 1024M,
  DEVICE 'D:\MP\Disk088\Partition3' 1024M,
  DEVICE 'D:\MP\Disk089\Partition3' 1024M,
  DEVICE 'D:\MP\Disk090\Partition3' 1024M,
  DEVICE 'D:\MP\Disk091\Partition3' 1024M,
  DEVICE 'D:\MP\Disk092\Partition3' 1024M,
  DEVICE 'D:\MP\Disk093\Partition3' 1024M,
  DEVICE 'D:\MP\Disk094\Partition3' 1024M,
  DEVICE 'D:\MP\Disk095\Partition3' 1024M,
  DEVICE 'D:\MP\Disk096\Partition3' 1024M,
  DEVICE 'D:\MP\Disk098\Partition3' 1024M,
  DEVICE 'D:\MP\Disk099\Partition3' 1024M,
  DEVICE 'D:\MP\Disk100\Partition3' 1024M,
  DEVICE 'D:\MP\Disk101\Partition3' 1024M,
  DEVICE 'D:\MP\Disk102\Partition3' 1024M,
  DEVICE 'D:\MP\Disk103\Partition3' 1024M,
  DEVICE 'D:\MP\Disk104\Partition3' 1024M,
  DEVICE 'D:\MP\Disk105\Partition3' 1024M,
  DEVICE 'D:\MP\Disk106\Partition3' 1024M,
  DEVICE 'D:\MP\Disk107\Partition3' 1024M,
  DEVICE 'D:\MP\Disk108\Partition3' 1024M,
  DEVICE 'D:\MP\Disk109\Partition3' 1024M,
  DEVICE 'D:\MP\Disk110\Partition3' 1024M)
ON NODE (3)
BUFFERPOOL BP16K
EXTENTSIZ 16
OVERHEAD 0.1
PREFETCHSIZE 2240
TRANSFERRATE 0.5;

```

```

CREATE REGULAR TABLESPACE OTHER_INDEX
PAGESIZE 16K
MANAGED BY DATABASE
USING (
  DEVICE 'D:\MP\Disk000\Partition4' 1024M,
  DEVICE 'D:\MP\Disk001\Partition4' 1024M,
  DEVICE 'D:\MP\Disk002\Partition4' 1024M,
  DEVICE 'D:\MP\Disk003\Partition4' 1024M,
  DEVICE 'D:\MP\Disk004\Partition4' 1024M,
  DEVICE 'D:\MP\Disk005\Partition4' 1024M,
  DEVICE 'D:\MP\Disk006\Partition4' 1024M,
  DEVICE 'D:\MP\Disk007\Partition4' 1024M,
  DEVICE 'D:\MP\Disk008\Partition4' 1024M,
  DEVICE 'D:\MP\Disk009\Partition4' 1024M,
  DEVICE 'D:\MP\Disk010\Partition4' 1024M,
  DEVICE 'D:\MP\Disk011\Partition4' 1024M,
  DEVICE 'D:\MP\Disk012\Partition4' 1024M,
  DEVICE 'D:\MP\Disk014\Partition4' 1024M,
  DEVICE 'D:\MP\Disk015\Partition4' 1024M,
  DEVICE 'D:\MP\Disk016\Partition4' 1024M,
  DEVICE 'D:\MP\Disk017\Partition4' 1024M,
  DEVICE 'D:\MP\Disk018\Partition4' 1024M,
  DEVICE 'D:\MP\Disk019\Partition4' 1024M,
  DEVICE 'D:\MP\Disk020\Partition4' 1024M,

```

```

  DEVICE 'D:\MP\Disk021\Partition4' 1024M,
  DEVICE 'D:\MP\Disk022\Partition4' 1024M,
  DEVICE 'D:\MP\Disk023\Partition4' 1024M,
  DEVICE 'D:\MP\Disk024\Partition4' 1024M,
  DEVICE 'D:\MP\Disk025\Partition4' 1024M,
  DEVICE 'D:\MP\Disk026\Partition4' 1024M)
ON NODE (0)
USING (
  DEVICE 'D:\MP\Disk028\Partition4' 1024M,
  DEVICE 'D:\MP\Disk029\Partition4' 1024M,
  DEVICE 'D:\MP\Disk030\Partition4' 1024M,
  DEVICE 'D:\MP\Disk031\Partition4' 1024M,
  DEVICE 'D:\MP\Disk032\Partition4' 1024M,
  DEVICE 'D:\MP\Disk033\Partition4' 1024M,
  DEVICE 'D:\MP\Disk034\Partition4' 1024M,
  DEVICE 'D:\MP\Disk035\Partition4' 1024M,
  DEVICE 'D:\MP\Disk036\Partition4' 1024M,
  DEVICE 'D:\MP\Disk037\Partition4' 1024M,
  DEVICE 'D:\MP\Disk038\Partition4' 1024M,
  DEVICE 'D:\MP\Disk039\Partition4' 1024M,
  DEVICE 'D:\MP\Disk040\Partition4' 1024M,
  DEVICE 'D:\MP\Disk042\Partition4' 1024M,
  DEVICE 'D:\MP\Disk043\Partition4' 1024M,
  DEVICE 'D:\MP\Disk044\Partition4' 1024M,
  DEVICE 'D:\MP\Disk045\Partition4' 1024M,
  DEVICE 'D:\MP\Disk046\Partition4' 1024M,
  DEVICE 'D:\MP\Disk047\Partition4' 1024M,
  DEVICE 'D:\MP\Disk048\Partition4' 1024M,
  DEVICE 'D:\MP\Disk049\Partition4' 1024M,
  DEVICE 'D:\MP\Disk050\Partition4' 1024M,
  DEVICE 'D:\MP\Disk051\Partition4' 1024M,
  DEVICE 'D:\MP\Disk052\Partition4' 1024M,
  DEVICE 'D:\MP\Disk053\Partition4' 1024M,
  DEVICE 'D:\MP\Disk054\Partition4' 1024M)
ON NODE (1)
USING (
  DEVICE 'D:\MP\Disk056\Partition4' 1024M,
  DEVICE 'D:\MP\Disk057\Partition4' 1024M,
  DEVICE 'D:\MP\Disk058\Partition4' 1024M,
  DEVICE 'D:\MP\Disk059\Partition4' 1024M,
  DEVICE 'D:\MP\Disk060\Partition4' 1024M,
  DEVICE 'D:\MP\Disk061\Partition4' 1024M,
  DEVICE 'D:\MP\Disk062\Partition4' 1024M,
  DEVICE 'D:\MP\Disk063\Partition4' 1024M,
  DEVICE 'D:\MP\Disk064\Partition4' 1024M,
  DEVICE 'D:\MP\Disk065\Partition4' 1024M,
  DEVICE 'D:\MP\Disk066\Partition4' 1024M,
  DEVICE 'D:\MP\Disk067\Partition4' 1024M,
  DEVICE 'D:\MP\Disk068\Partition4' 1024M,
  DEVICE 'D:\MP\Disk070\Partition4' 1024M,
  DEVICE 'D:\MP\Disk071\Partition4' 1024M,
  DEVICE 'D:\MP\Disk072\Partition4' 1024M,
  DEVICE 'D:\MP\Disk073\Partition4' 1024M,
  DEVICE 'D:\MP\Disk074\Partition4' 1024M,
  DEVICE 'D:\MP\Disk075\Partition4' 1024M,
  DEVICE 'D:\MP\Disk076\Partition4' 1024M,
  DEVICE 'D:\MP\Disk077\Partition4' 1024M,
  DEVICE 'D:\MP\Disk078\Partition4' 1024M,
  DEVICE 'D:\MP\Disk079\Partition4' 1024M,
  DEVICE 'D:\MP\Disk080\Partition4' 1024M,
  DEVICE 'D:\MP\Disk081\Partition4' 1024M,
  DEVICE 'D:\MP\Disk082\Partition4' 1024M)
ON NODE (2)
USING (
  DEVICE 'D:\MP\Disk084\Partition4' 1024M,
  DEVICE 'D:\MP\Disk085\Partition4' 1024M,
  DEVICE 'D:\MP\Disk086\Partition4' 1024M,
  DEVICE 'D:\MP\Disk087\Partition4' 1024M,
  DEVICE 'D:\MP\Disk088\Partition4' 1024M,
  DEVICE 'D:\MP\Disk089\Partition4' 1024M,

```



```

    DEVICE 'D:\MP\Disk110\Partition5' 2048M)
ON NODE (3)
BUFFERPOOL BP16K
EXTENTSIZE 16
OVERHEAD 0.1
PREFETCHSIZE 2240
TRANSFERRATE 0.5;

```

create_uf_tables

```
connect to tpcd;
```

```
drop table TPCDTEMP.ORDERS_NEW;
drop table TPCDTEMP.ORDERS_DEL;
drop table TPCDTEMP.LINEITEM_NEW;
```

```
commit;
```

```

CREATE TABLE TPCDTEMP.ORDERS_NEW ( APP_ID
INTEGER NOT NULL,
        O_ORDERKEY    INTEGER NOT
NULL,
        O_CUSTKEY     INTEGER NOT NULL,
        O_ORDERSTATUS CHAR(1) NOT
NULL,
        O_TOTALPRICE  FLOAT NOT NULL,
        O_ORDERDATE   DATE NOT NULL,
        O_ORDERPRIORITY CHAR(15) NOT
NULL,
        O_CLERK       CHAR(15) NOT NULL,
        O_SHIPPRIORITY INTEGER NOT
NULL,
        O_COMMENT     VARCHAR(79) NOT
NULL WITH DEFAULT)
    IN OTHER_TABLE
    INDEX IN OTHER_INDEX
    PARTITIONING KEY(O_ORDERKEY) USING
HASHING;

```

```

CREATE INDEX "TPCDTEMP"."I_ORDERS_NEW" ON
"TPCDTEMP"."ORDERS_NEW"
("APP_ID" ASC,
 "O_ORDERKEY" ASC,
 "O_CUSTKEY" ASC,
 "O_ORDERSTATUS" ASC,
 "O_TOTALPRICE" ASC,
 "O_ORDERDATE" ASC,
 "O_ORDERPRIORITY" ASC,
 "O_CLERK" ASC,
 "O_SHIPPRIORITY" ASC,
 "O_COMMENT" ASC);

```

```

-- create unique index tpcdtemp.i_orders_new
-- on tpcdtemp.orders_new
-- (o_orderkey) include (app_id);

```

```

CREATE TABLE TPCDTEMP.ORDERS_DEL ( APP_ID
INTEGER NOT NULL,
        O_ORDERKEY    INTEGER NOT
NULL)
    IN OTHER_TABLE
    INDEX IN OTHER_INDEX
    PARTITIONING KEY(O_ORDERKEY) USING
HASHING;

```

```

CREATE UNIQUE INDEX
"TPCDTEMP"."I_ORDERS_DEL" ON
"TPCDTEMP"."ORDERS_DEL"
("APP_ID" ASC,
 "O_ORDERKEY" ASC);

```

```

CREATE TABLE TPCDTEMP.LINEITEM_NEW (
APP_ID INTEGER NOT NULL,
        L_ORDERKEY    INTEGER NOT NULL,
        L_PARTKEY     INTEGER NOT NULL,
        L_SUPPKEY     INTEGER NOT NULL,
        L_LINENUMBER  INTEGER NOT
NULL,
        L_QUANTITY    FLOAT NOT NULL,
        L_EXTENDEDPRICE FLOAT NOT
NULL,
        L_DISCOUNT   FLOAT NOT NULL,
        L_TAX         FLOAT NOT NULL,
        L_RETURNFLAG  CHAR(1) NOT
NULL,
        L_LINESTATUS  CHAR(1) NOT NULL,
        L_SHIPDATE    DATE NOT NULL,
        L_COMMITDATE  DATE NOT NULL,
        L_RECEIPTDATE DATE NOT NULL,
        L_SHIPINSTRUCT CHAR(25) NOT
NULL,
        L_SHIPMODE    CHAR(10) NOT NULL,
        L_COMMENT     VARCHAR(44) NOT
NULL WITH DEFAULT)
    IN LINEITEM_TABLE
    INDEX IN LINEITEM_INDEX
    PARTITIONING KEY(L_ORDERKEY) USING
HASHING;

```

```

-- create index TPCDTEMP.I_LINEITEM_NEW on
TPCDTEMP.LINEITEM_NEW (L_ORDERKEY,APP_ID);
CREATE INDEX "TPCDTEMP"."I_LINEITEM_NEW" ON
"TPCDTEMP"."LINEITEM_NEW"
("APP_ID" ASC);

```

```
COMMIT WORK;
```

```

alter table tpcdtemp.orders_new locksize table;
alter table tpcdtemp.orders_del locksize table;
alter table tpcdtemp.lineitem_new locksize table;

```

```
COMMIT WORK;
```

```
connect reset;
```

db2nodes.cfg

```

0 tpchserv TPCHSERV 0
1 tpchserv TPCHSERV 1
2 tpchserv TPCHSERV 2
3 tpchserv TPCHSERV 3

```

load_db2set.bat

```

DB2SET DB2_EXTENDED_OPTIMIZATION=Y
DB2SET DB2_ANTIJOIN=ON

```

```

DB2SET
DB2BPVARS=d:\home\db2tpch\tpch\ddl\win.mln \scattered_
read
DB2SET DB2MEMMAXFREE=1000000000
DB2SET DB2OPTIONS=-t -v +c
DB2SET DB2NTNOCACHE=ON
DB2SET DB2INSTPROF=D:\home\db2tpch
DB2SET DB2COMM=
DB2SET DB2_PARALLEL_IO=*

```

run_db2set.bat

```

DB2SET DB2_EXTENDED_OPTIMIZATION=Y
DB2SET DB2_ANTIJOIN=ON
DB2SET
DB2BPVARS=d:\home\db2tpch\tpch\ddl\win.mln \scattered_
read
DB2SET DB2MEMMAXFREE=1000000000
DB2SET DB2OPTIONS=-t -v +c
DB2SET DB2NTNOCACHE=ON
DB2SET DB2_LIKE_VARCHAR=
DB2SET DB2INSTPROF=d:\home\db2tpch
DB2SET DB2COMM=
DB2SET DB2_PARALLEL_IO=*
DB2SET DB2_SELECTIVITY=

```

runstats_UF.bat

```

db2start
db2 connect to tpcd
db2 runstats on table tpcdtemp.lineitem_new with
distribution and detailed indexes all
db2 runstats on table tpcdtemp.orders_new with distribution
and detailed indexes all
db2 runstats on table tpcdtemp.orders_del with distribution
and detailed indexes all
db2 commit
db2 connect reset

```

dss.runstats

```

values (current timestamp, 'TS*** runstats nation START
like ');
RUNSTATS ON TABLE TPCD.NATION WITH
DISTRIBUTION on all columns
and columns (
    n_name like statistics,
    n_comment like statistics )
AND INDEXES ALL;
commit;
values (current timestamp, 'TS*** runstats done nation ');
RUNSTATS ON TABLE TPCD.REGION WITH
DISTRIBUTION on all columns
and columns (
    r_name like statistics,
    r_comment like statistics )
AND INDEXES ALL;
commit;
RUNSTATS ON TABLE TPCD.SUPPLIER WITH
DISTRIBUTION on all columns
and columns (
    s_name like statistics,
    s_address like statistics,
    s_phone like statistics,
    s_comment like statistics)

```

```

AND INDEXES ALL;
commit;
values (current timestamp, 'TS*** runstats done part ');
RUNSTATS ON TABLE TPCD.PART WITH
DISTRIBUTION on all columns
and columns (
    p_name like statistics,
    p_mfgr like statistics,
    p_brand like statistics,
    p_type like statistics,
    p_container like statistics,
    p_comment like statistics)
AND INDEXES ALL;
commit;
values (current timestamp, 'TS*** runstats done partsupp ');
RUNSTATS ON TABLE TPCD.PARTSUPP WITH
DISTRIBUTION on all columns
and columns (
    ps_comment like statistics)
AND INDEXES ALL;
commit;
values (current timestamp, 'TS*** runstats done customer ');
RUNSTATS ON TABLE TPCD.CUSTOMER WITH
DISTRIBUTION on all columns
and columns (
    c_name like statistics,
    c_address like statistics,
    c_phone like statistics,
    c_mktsegment like statistics,
    c_comment like statistics)
AND INDEXES ALL;
commit;
values (current timestamp, 'TS*** runstats done orders ');
RUNSTATS ON TABLE TPCD.ORDERS WITH
DISTRIBUTION on all columns
and columns (
    o_orderstatus like statistics,
    o_orderpriority like statistics,
    o_clerk like statistics,
    o_comment like statistics)
AND INDEXES ALL;
commit;
values (current timestamp, 'TS*** runstats done lineitem ');
RUNSTATS ON TABLE TPCD.LINEITEM WITH
DISTRIBUTION on all columns
and columns (
    l_return flag like statistics,
    l_linestatus like statistics,
    l_shipinstruct like statistics,
    l_shipmode like statistics,
    l_comment like statistics)
AND INDEXES ALL;
COMMIT WORK;
values (current timestamp, 'TS*** runstats END like');

```

loaddata_100GB

```

connect to tpcd;

values(current timestamp, 'TS*** Start Loading Flat Data ');

LOAD FROM
    e:\flatdata_100GB\region.tbl
OF DEL MODIFIED BY COLDEL| FASTPARSE
MESSAGES d:\home\db2tpch\tmp\region.msg
REPLACE INTO TPCD.REGION
STATISTICS NO
NONRECOVERABLE;

```

```

commit work;
values(current timestamp, 'TS*** Done Loading Region ');

LOAD FROM
  e:\flatdata_100GB\nation.tbl
OF DEL MODIFIED BY COLDEL| FASTPARSE
MESSAGES d:\home\db2tpch\tmp\nation.msg
REPLACE INTO TPCD.NATION
STATISTICS NO
NONRECOVERABLE;
commit work;
values(current timestamp, 'TS*** Done Loading Nation ');

load from
  supplier.1
OF DEL MODIFIED BY COLDEL| FASTPARSE
MESSAGES d:\home\db2tpch\tmp\supplier.msg
REPLACE INTO TPCD.SUPPLIER
NONRECOVERABLE CPU_PARALLELISM 8
partitioned db config mode load_only
output_dbpartnums (0,1,2,3)
part_file_location e:\flatdata_100GB;
commit work;
values(current timestamp, 'TS*** Done Loading Supplier ');

load from
  customer.1,
  customer.2
OF DEL MODIFIED BY COLDEL| FASTPARSE
MESSAGES d:\home\db2tpch\tmp\customer.msg
REPLACE INTO TPCD.customer NONRECOVERABLE
CPU_PARALLELISM 8
partitioned db config mode load_only
output_dbpartnums (0,1,2,3)
part_file_location e:\flatdata_100GB;
commit work;
values(current timestamp, 'TS*** Done Loading Customer ');

values(current timestamp);
load from
  part.1,
  part.2
OF DEL MODIFIED BY COLDEL| FASTPARSE
MESSAGES d:\home\db2tpch\tmp\part.msg
REPLACE INTO TPCD.part NONRECOVERABLE
CPU_PARALLELISM 8
partitioned db config mode load_only
output_dbpartnums (0,1,2,3)
part_file_location e:\flatdata_100GB;
commit work;
values(current timestamp, 'TS*** Done Loading Part ');

values(current timestamp);
load from
  partsupp.1,
  partsupp.2,
  partsupp.3,
  partsupp.4,
  partsupp.5,
  partsupp.6,
  partsupp.7,
  partsupp.8,
  partsupp.9,
  partsupp.10,
  partsupp.11,
  partsupp.12
OF DEL MODIFIED BY COLDEL| FASTPARSE
MESSAGES d:\home\db2tpch\tmp\partsupp.msg
REPLACE INTO TPCD.partsupp NONRECOVERABLE
CPU_PARALLELISM 8

```

```

partitioned db config mode load_only
output_dbpartnums (0,1,2,3)
part_file_location e:\flatdata_100GB;
commit work;
values(current timestamp, 'TS*** Done Loading Partsupp ');

load from
  orders.1,
  orders.2,
  orders.3,
  orders.4,
  orders.5,
  orders.6,
  orders.7,
  orders.8,
  orders.9,
  orders.10,
  orders.11,
  orders.12
OF DEL MODIFIED BY COLDEL| FASTPARSE
MESSAGES d:\home\db2tpch\tmp\orders.msg
REPLACE INTO TPCD.orders NONRECOVERABLE
CPU_PARALLELISM 8
partitioned db config mode load_only
output_dbpartnums (0,1,2,3)
part_file_location e:\flatdata_100GB;
commit work;
values(current timestamp, 'TS*** Done Loading Orders ');

load from
  lineitem.1,
  lineitem.2,
  lineitem.3,
  lineitem.4,
  lineitem.5,
  lineitem.6,
  lineitem.7,
  lineitem.8,
  lineitem.9,
  lineitem.10,
  lineitem.11,
  lineitem.12,
  lineitem.13,
  lineitem.14,
  lineitem.15,
  lineitem.16,
  lineitem.17,
  lineitem.18,
  lineitem.19,
  lineitem.20,
  lineitem.21,
  lineitem.22,
  lineitem.23,
  lineitem.24,
  lineitem.25,
  lineitem.26,
  lineitem.27,
  lineitem.28,
  lineitem.29,
  lineitem.30,
  lineitem.31,
  lineitem.32,
  lineitem.33,
  lineitem.34,
  lineitem.35,
  lineitem.36,
  lineitem.37,
  lineitem.38,
  lineitem.39,
  lineitem.40,

```

```

lineitem.41,
lineitem.42,
lineitem.43,
lineitem.44,
lineitem.45,
lineitem.46,
lineitem.47,
lineitem.48,
lineitem.49,
lineitem.50,
lineitem.51,
lineitem.52,
lineitem.53,
lineitem.54,
lineitem.55,
lineitem.56,
lineitem.57,
lineitem.58,
lineitem.59,
lineitem.60,
lineitem.61,
lineitem.62,
lineitem.63,
lineitem.64
OF DEL MODIFIED BY COLDEL| FASTPARSE
MESSAGES d:\home\db2tpch\tmp\lineitem.msg
REPLACE INTO TPCD.lineitem NONRECOVERABLE
CPU_PARALLELISM 8
partitioned db config mode load_only
output_dbpartnums (0,1,2,3)
part_file_location e:\flatdata_100GB;
commit work;
values(current timestamp, 'TS*** Done Loading Lineitem ');

connect reset;

```

load_db_cfg

```

update database configuration for tpcd using
NUM_FREQVALUES 0
NUM_QUANTILES 600
buffpage 100000
catalogcache_sz 386
chnpggs_thresh 50
dbheap 6654
locklist 642
logbufsz 1048
logfilsiz 8192
logprimary 10
logsecond 5
maxappls 70
maxlocks 20
mincommit 1
num_iocleaners 14
num_ioservers 14
pckcachesz 320
softmax 600
sortheap 12000
stat_heap_sz 16000
stmheap 4096
util_heap_sz 524288
applheapsz 768
app_ctl_heap_sz 1024
dft_queryopt 7
dft_degree 1;

get database configuration for tpcd;

```

load_dbm_cfg

```

update database manager configuration using
cpuspeed -1
sheapthres 250000
agent_stack_sz 16
aslheapsz 15
rqrioblk 32767
intra_parallel no
max_querydegree -1
maxagents 200
num_poolagents 4
num_initagents 4
diaglevel 3;

get database manager configuration;

```

scattered_read

```

# 1/2 -> 1/3 of number of prefetchers
NUMPREFETCHQUEUES=4
PREFETCHQUEUESIZE=1000

# turn on scatter read for these types
NT_SCATTER_SMS=1
NT_SCATTER_DMSFILE=1
NT_SCATTER_DMSDEVICE=1

```

SetLogDir.bat

```

db2_all \"%|| \"%call
D:\home\db2tpch\tpch\ddl\win.mln\SetLogDir.## \"% "

```

SetLogDir.0.bat

```

db2 update db cfg for tpcd using newlogpath F:\db2tpch\logs

```

SetLogDir.1.bat

```

db2 update db cfg for tpcd using newlogpath g:\db2tpch\logs

```

SetLogDir.2.bat

```

db2 update db cfg for tpcd using newlogpath h:\db2tpch\logs

```

SetLogDir.3.bat

```

db2 update db cfg for tpcd using newlogpath i:\db2tpch\logs

```

tpcd.setup

```

# NOTE: ALL variable defitions must have a comment at the
#       end - haven't got
#       the getvars script recognizing the uncommented line yet
TPCD_PLATFORM=nt           # aix, nt, sun ....
TPCD_VERSION=2             # 1 or 2 (Version of
tpcd). Default 1
TPCD_DBNAME=TPCD          # name to create
database under

```



```

TPCD_WORKLOAD=H          # TPC version (R for
TPCR, H for TPCH)
TPCD_AUDIT_DIR=d:\home\db2tpch\tpch # top level
directory of tar file for
                                # all the tpcd scripts
TPCD_PRODUCT=v5          # v5 or pe
                                # Use pe if you really are using pe
v1.2!
                                # but I won't guarantee that it will
work!
TPCD_MODE=mln            # uni/smp/mln/mpp
TPCD_PHYS_NODE=1         # number of physical
nodes
TPCD_LN_PER_PN=4         # number of logical
nodes per physical node
TPCD_SF=100              # size of the database
(1=1GB,...) to
                                # get test size databases use:
                                # 0.012 = 12MB
                                # 0.1 = 100MB
TPCD_BUILD_STAGE=ALL     # where to start
the build - currently the
                                # following is possible:
                                # ALL - do everything (create,load,
                                # index,stats,config) (Default)
                                # CRTTBSP- start after create db
and
                                # config setting. Start right at
                                # create tbps
                                # LOAD - start from the load of the
tables
                                # INDEX - start from the index
creation
                                # (NOTE if earlyindex is
specified,
                                # then this will do the create
index
                                # followed by the load...)
                                # RUNSTATS - start from the
runstats
                                # (NOTE Do not use this option
if
                                # distribution stats are gathered
                                # as part of the load, this will
                                # start after the load and indices
                                # have been created.
                                # CONFIG - start from the setting
up of
                                # the benchmark runs config
setup
                                #
TPCD_DBPATH=d:           # path for database
(defaults to home)
TPCD_DDL_PATH=d:\home\db2tpch\tpch\ddl\win.mln #
path for all ddl files and customized
                                # scripts (load script), config files,etc
TPCD_BUFFERPOOL_DEF=create_bufferpools # name of
file with bufferpool definitions
                                # and sizes
TPCD_NODEGROUP_DEF=create_nodegroups # name of
file in ddlpath with nodegroup
                                # definitions
TPCD_EXPLAIN_DDL=NULL    # file with DDL
for explains statments
                                # if this is NULL then uses the
default
                                # and puts it in USERSPACE1
across all
                                # nodes...nt 1TB found it was faster
if

```

```

                                # just in a single node nodegroup
TPCD_TBSP_DDL=create_tablespaces # ddl file for
tablespaces
TPCD_DDL=create_tables    # ddl file for tables
TPCD_QUAL_TBSP_DDL=create_qual_tablespaces # ddl
file for tablespaces for qual
TPCD_QUAL_DDL=create_tables # ddl file for
qualification database
                                # tablespaces and tables should be
identical
                                # to regular ddl except container
names
TPCD_INDEXDDL=create_indexes # ddl file for
indexes
TPCD_EXTRAINDEX=no        # no = no extra
indexes
                                # filename = If you want to create
some
                                # indices before
                                # the load, and some indices after,
then
                                # use this additional file to specify
the
TPCD_ADD_RI=NULL          # file name that
contains any RI
                                # constraints to add after index
creation
                                # set to NULL (default) if unused
                                # indices to create after the load.
TPCD_AST=NULL             # file name that contains
complete AST
                                # definition including connection to
                                # the database, summary table
creation,
                                # population, indexing and runstats.
TPCD_RUNSTATS=dss.runstats # ddl file for
runstats. If you have
                                # created indices before the load (ie
                                # TPCD_EARLYINDEX=yes), have
specified to
                                # gather stats on the load command
(either
                                # through your own load script or by
using
                                # TPCD_LOADSTATS=yes, AND
you have
                                # specified a file for
TPCD_EXTRAINDEX
                                # then this runstats file should
include
                                # the runstats commands specifically
for
                                # the extra indices.
TPCD_RUNSTATSHORT=NULL    # NOTE!!
THIS IS BUGGY....I can't get it to
                                # work on UNI successfully
                                # ddl file for short runstats that are
                                # run in the background while the
                                # TPCD_RUNSTATS are run in the
foreground
                                # of the build. If this is used, then
                                # TPCD_RUNSTATS should have
the runstats
                                # command for lineitem and
                                # TPCD_RUNSTATSHORT should
have runstats
                                # commands for all other tables.
TPCD_DBGEN=d:\home\db2tpch\tpch\appendix.v2\dbgen #
path name to data generation code

```

```

# Parameters used to specify source
of
# data for load scripts
TPCD_INPUT=e:\flatdata_100GB # NULL - use
dbgen generated data OR
# path name - to the pre-generated
# flat files
# /gwl/dss/12MB - path for
pregenerated 12MB
# /gwl/dss/100MB - path for
pregen'd 100MB
#
TPCD_QUAL_INPUT=e:\flatdata_qual # NULL - use
dbgen generated data OR
# path name - to the pre-generated
# flat files

TPCD_TAILOR_DIR=d:\home\db2tpch\tailor # path name
for the directory used to
# generate split specific config files
# only used for partitioned
environment

TPCD_EARLYINDEX=no # create indexes
before the load

# LOAD specific parameters follow:
TPCD_LOAD_DB2SET_SCRIPT=load_db2set.bat# Script
that contains the db2set commands
# for the load process Use NULL if
not
# specified
TPCD_LOAD_CONFIGFILE=load_db_cfg # config file
with specific database config
# parms for the load/index/runstats
part
# of the build.
# set to NULL if use defaults
TPCD_LOAD_DBM_CONFIGFILE=load_dbm_cfg #
config file with specific
# database manager config parts for
the
# load/index/runstats part of the
build.
# set to NULL if use defaults
TPCD_LOAD_QUALCONFIGFILE=load_qual_db_cfg #
config file with specific database config
# parms for the load/index/runstats
part
# of the build for qualification db.
# set to NULL if use defaults
TPCD_LOAD_DBM_QUALCONFIGFILE=load_qual_dbm
_cfg # config file with specific
# database manager config parts for
the
# load/index/runstats part of the
build.
# set to NULL if use defaults
TPCD_LOADSTATS=yes # gather statistics
during load
# ignored if EARLYINDEX is not
set
# due to runstats limitation
TPCD_TEMP=d:\home\db2tpch\temp # path for LOAD
temp files
# defaults to /u/<instance>/sqllib/temp
# used in load script only
TPCD_SORTBUF=8192 # sortbuf size for
LOAD
# used in load script only

```

```

TPCD_LOAD_PARALLELISM=0 # degree of
parallelism to use on load
# 0 = use the "intelligent default"
that
# the load will chose at run time
# used in load script only
TPCD_COPY_DIR=NULL # directory where
copy image is created
# on load command CURRENTLY
UNUSED
# used in load script only
TPCD_FASTPARSE=yes # use fastparse on
load
# used in load script only

# Backup and logfile specific
parameters follow:
TPCD_BACKUP_DIR=J:\db2tpch\backup # directory
where backup files are placed
TPCD_LOGPRIMARY=NULL # NULL/value =
how many primary log files
# to configure. If NULL is specified
then
# the default is not changed.
TPCD_LOGFILSIZ=1000 # NULL/value = how
4KB pages to use for
# logfilsiz db cfg parameter. If
NULL is
# specified then the default is not
changed
TPCD_LOGSECOND=NULL # NULL/value =
how many secondary log files
# to configure. If NULL is specified
then
# the default is not changed.
TPCD_LOG_DIR=f:\db2tpch\logs # directory where
log files stored..
# NULL leaves them in the dbpath
TPCD_LOG_DIR_SETUP_SCRIPT=SetLogDir.bat#
executable script to setup log dir
TPCD_LOG_QUAL_DIR=f:\db2qual\logs # directory
where qual log files stored
# NULL leaves them in the dbpath
TPCD_LOG=yes # yes/no - whether to turn
LOG_RETAIN on
# i.e. are backups needed to be taken

# CONFIG specific parameters
TPCD_DB2SET_SCRIPT=run_db2set.bat # Script that
contains the db2set commands
# for the benchmark run. Use NULL
if not
# specified
TPCD_CONFIGFILE=run_db_cfg # name of
configuration file in ddl path
# that will be used for the benchmark
run
TPCD_DBM_CONFIG=run_dbm_cfg # name of
config file for database manager
# cfg parms
TPCD_QUALCONFIGFILE=run_qual_db_cfg # name of
database cfg file in ddl path
# for qualification database
TPCD_DBM_QUALCONFIG=run_qual_dbm_cfg # name
of config file for database
# manager cfg parms

TPCD_MACHINE=NULL # set to NULL if
using load config file

```

used to # big/medium/small size of machine

sortheap,sheaphres # determine buffpage,

create # and ioservers parms for load,

index and runstats

NOTE that this parameter is

ignored if # a TPCD_LOAD_CONFIGFILE

TPCD_SMPDEGREE=4 # 1...# of degrees of parallelism to run

with

TPCD_AGENTPRI=NULL # set agentpri to this value (default

is SYSTEM)

TPCD_ACTIVATE=yes # activate the database upon build

completion

run specific parameters

TPCD_AUDIT=yes # no/yes

no - don't set up qualification db stuff

yes - set up qualification db queries

- build the update function tables

and data before we get into the

timing of the creation of the

tables and the load.

TPCD_TMP_DIR=d:\home\db2tpch\tmp # place to put temp working files

TPCD_SHARED_TEMP_FULL_PATHNAME=d:\home\db2tpch\tmp # just added

TPCD_QUERY_TEMPLATE_DIR=standard.V2 # subdirectory in AUDIT_DIR/queries

to use as the source of the query

templates. Currently there are

v2 ones and pe ones. You can

make # your own directory following the

same # form as in the v2 directory using

any variant you wish

TPCD_QUAL_DBNAME=TPCD # name of qualification database

TPCD_NUMSTREAM=5 # number of streams for the throughput test

TPCD_FLATFILES=m:\flatdata_100GB\UF # where to generate flat files

for update functions

TPCD_STAGING_TABLE_DDL=create_uf_tables # contains the ddl for creating

the staging tables if they are used for

the update functions

TPCD_PRELOAD_STAGING_TABLE_SCRIPT=LoadSampleUFData # file that contains the sql for preloading

and gathering stats on sample UF data

Note that the data used is sample data

and is not data from any of the applied

update pairs

TPCD_DELETE_STAGING_TABLE_SQL>DeleteSampleUFData.sql # file that contains the sql for deleting

the preloaded data from the staging

tables

TPCD_UPDATE_IMPORT=false # true = use import for the staging tables

for UNI/SMP mode only (code change in

tpcdbatch) (if not uni mode then must

change load_update)

false = use load for staging tables

The default is false if not set.

NOTE that this parm is only for UNI/SMP

it is not for multi node invocation

TPCD_SPLIT_UPDATES=128 # number of chunks to split the update

function into.

TPCD_CONCURRENT_INSERTS=32 # number of insert chunks that are run

concurrently.

TPCD_SPLIT_UPDATES

should be evenly divisible by this number

TPCD_CONCURRENT_INSERTS_LOAD=32 # number of insert chunks that are loaded

concurrently.

TPCD_SPLIT_UPDATES should

be evenly divisible by this number.

this controls the load portion of the

insert routine for partitioned databases

TPCD_SPLIT_DELETES=128 # number of portions to split the delete

function into.

this variable is only valid in UNI/SMP

mode.

TPCD_CONCURRENT_DELETES=32 # number of DELETE chunks that are run

concurrently.

TPCD_SPLIT_UPDATES

should be evenly divisible by this number

TPCD_GEN_UPDATEPAIRS=32 # number of pairs of update function data

to generate

if 0 the update data generation and

setup will not be done. use this if

you don't want to run the update

functions (Update functions not

fully tested in new env't yet)

TPCD_GENERATE_SEED_FILE=yes # yes/no

These are the seed files for

generating the query substitution values

yes - generate a seed file base on

year/month/day (for audited runs)

no - use qgen's default seeds

TPCD_RUN_ON_MULTIPLE_NODES=NULL # pe V1.2 only - will we be running each

query stream of throughput starting at

different nodes or from same node

TPCD_STATS_INTERVAL=5 # timing interval for vmstats/iostats

TPCD_STATS_THRU_INT=300 # timing interval for vmstats/iostats for

throughput run

TPCD_GATHER_STATS=off # on/off - only implement for AIX yet

```

# on = gather statistics around power
# test run (vmstat,iostat,netstat)
# off = no stats gathered during
power run

TPCD_UFTEMP=UFTEMP          # base name of
tablespace(s) where the
# staging tables for the update
functions
# are created
# this name will be used as the
# basename for the tablespaces...eg
# UFTEMP1 UFTEMP2 ....
TPCD_HAVECOMPILER=yes       # rebuild
tpcdbatch executable
# yes/no
TPCD_SLEEP=5                # ?
TPCD_INLISTMAX=default      # max num of keys
to delete at a time
# for UF2, use "default" for default.
TPCD_LOAD_SCRIPT=loaddata_100GB # script to run
for loading tables
# in TPCD_DDLPATH directory
under mln/mpp
# leave as NULL if using default
genloaduni
TPCD_LOAD_SCRIPT_QUAL=loaddata_qual # script to
run for loading tables in
# TPCD_DDLPATH directory under
mln/mpp
# for QUAL db
TPCD_ROOTPRIV=no           # do you have root
privileges to be able
# get values of things like schedtune
# and vmtune (currently on AIX
only)
# acid test specific information
TPCD_DB2LOG=d:\home\db2tpch\db2tpch # directory
where the db2diag.log can
# be found for the durability tests
TPCD_APPEND_ON=no         # set to no if the
cluster indexes are used

```

run_db_cfg

update database configuration for tpcd using

```

buffpage 375000
catalogcache_sz 386
dbheap 20000
locklist 16384
maxlocks 5
maxappls 150
mincommit 1
num_iocleaners 14
num_ioservers 14
DLCHKTIME 5000
pckcachesz 640
logprimary 20
softmax 1800
sortheap 75000
stat_heap_sz 10000
stmtheap 10000
util_heap_sz 40000
applheapsz 16000
app_ctl_heap_sz 2048
dft_degree 1
dft_queryopt 7
maxfilop 1024
chnpggs_thresh 80;

```

get database configuration for tpcd;

run_dbm_cfg

```

update database manager configuration using
cpuspeed -1
sheapthres 400000
agent_stack_sz 16
aslheapsz 15
rqrioblk 32767
intra_parallel no
max_querydegree -1
maxagents 3600
num_poolagents 64
num_initagents 4
fcm_num_buffers 30000
DFT_MON_TIMESTAMP OFF
numdb 1
diaglevel 3;
get database manager configuration;

```

Appendix C: Qualification Query Output

Qualification Queries

Query 1

Start timestamp 06/27/03 16:56:32.950

-- Query 01 - Var_0 Rev_01 - Pricing Summary Report
Query

Tag: Q1 Stream: -1 Sequence number: 17

```
select
l_returnflag,
l_linestatus,
sum(l_quantity) as sum_qty,
sum(l_extendedprice) as sum_base_price,
sum(l_extendedprice * (1 - l_discount)) as sum_disc_price,
sum(l_extendedprice * (1 - l_discount) * (1 + l_tax)) as
sum_charge,
avg(l_quantity) as avg_qty,
avg(l_extendedprice) as avg_price,
avg(l_discount) as avg_disc,
count(*) as count_order
from
tpcd.lineitem
where
l_shipdate <= date ('1998-12-01') - 90 day
group by
l_returnflag,
l_linestatus
order by
l_returnflag,
l_linestatus
```

L_RETURNFLAG	L_LINESTATUS	SUM_QTY	SUM_BASE_PRICE	SUM_DISC_PRICE	SUM_CHARGE	AVG_QTY	AVG_PRICE	AVG_DISC	COUNT_ORDER
--------------	--------------	---------	----------------	----------------	------------	---------	-----------	----------	-------------

A	F	37734107.000	56586554400.728						
53758257134.869		55909065222.829	25.522						
38273.130		0.050	1478493						
N	F	991417.000	1487504710.380						
1413082168.054		1469649223.194	25.516						
38284.468		0.050	38854						
N	O	74476040.000							
111701729697.737		106118230307.604							
110367043872.494		25.502	38249.118						
0.050		2920374							
R	F	37719753.000	56568041380.900						
53741292684.604		55889619119.832	25.506						
38250.855		0.050	1478870						

Number of rows retrieved is: 4

Stop timestamp 06/27/03 16:56:37.280
Query Time = 4.3 secs

Query 2

Start timestamp 06/27/03 16:55:25.870

-- Query 02 - Var_0 Rev_02 - Minimum Cost Supplier Query

Tag: Q2 Stream: -1 Sequence number: 2

```
select
s_acctbal,
s_name,
n_name,
p_partkey,
p_mfgr,
s_address,
s_phone,
s_comment
from
tpcd.part,
tpcd.supplier,
tpcd.partsupp,
tpcd.nation,
tpcd.region
where
p_partkey = ps_partkey
and s_suppkey = ps_suppkey
and p_size = 15
and p_type like '%BRASS'
and s_nationkey = n_nationkey
and n_regionkey = r_regionkey
and r_name = 'EUROPE'
and ps_supplycost = (
select
min(ps_supplycost)
from
tpcd.partsupp,
tpcd.supplier,
tpcd.nation,
tpcd.region
where
p_partkey = ps_partkey
and s_suppkey = ps_suppkey
and s_nationkey = n_nationkey
and n_regionkey = r_regionkey
and r_name = 'EUROPE'
)
order by
s_acctbal desc,
n_name,
s_name,
p_partkey
fetch first 100 rows only
```

S_ACCTBAL	S_NAME	N_NAME
P_PARTKEY	P_MFGR	S_ADDRESS
S_PHONE	S_COMMENT	

9938.530 Supplier#000005359 UNITED
KINGDOM 185358 Manufacturer#4
QKuHYh,vZGiwu2FWEJoLDx04 33-429-790-
6131 blithely silent pinto beans are furiously. slyly final
deposits across
9937.840 Supplier#000005969 ROMANIA
108438 Manufacturer#1
ANDENSOSmk,miq23Xfb5RWt6dvUcvt6Qa 29-520-
692-3537 carefully slow deposits use furiously. slyly ironic
platelet s above the ironic
9936.220 Supplier#000005250 UNITED
KINGDOM 249 Manufacturer#4
B3rqp0xbSEim4Mpy2RH J 33-320-228-2957
blithely special packages are. steal hily express deposits
across the closely final instructi
9923.770 Supplier#000002324 GERMANY
29821 Manufacturer#4 y3OD9UywSTok
17-779-299-1839 quickly express packages breach quiet
pinto beans. requ
9871.220 Supplier#000006373 GERMANY
43868 Manufacturer#5 J8fcXWsTqM
17-813-485-8637 never silent deposits integrate furiously
blit
9870.780 Supplier#000001286 GERMANY
81285 Manufacturer#2
YKA,E2fjiVd7eUrzp2Ef8j1QxGo2DFnosaTEH 17-516-
924-4574 final theodolites cajole slyly special,
9870.780 Supplier#000001286 GERMANY
181285 Manufacturer#4
YKA,E2fjiVd7eUrzp2Ef8j1QxGo2DFnosaTEH 17-516-
924-4574 final theodolites cajole slyly special,
9852.520 Supplier#000008973 RUSSIA
18972 Manufact urer#2
t5L67YdBYHH6o,Vz24jpDyQ9 32-188-594-7038
quickly regular instructions wake-- carefully unusual braids
into the expres
9847.830 Supplier#000008097 RUSSIA
130557 Manufacturer#2 xMe97bpE69NzdWLoX
32-375-640-3593 slyly regular dependencies sleep slyly
furiously express dep
9847.570 Supplier#000006345 FRANCE
86344 Manufacturer#1
VSt3rzk3qG698u6ld8HhOBByvrTcSTsvQIDQDag 16-886-
766-7945 silent pinto beans should have to snooze carefully
along the final reques

... Rows Deleted ...

7992.400 Supplier#000006108 FRANCE
118574 Manufacturer#1 8tBydnTDwUqfBfFV4l3
16-974-998-8937 regular pinto beans are after
7980.650 Supplier#000001288 FRANCE
13784 Manufacturer#4 zE,7HgVPrCn
16-646-464-8247 unusual pinto beans cajole furiously
according t
7950.370 Supplier#000008101 GERMANY
33094 Manufacturer#5 kkYvL6IuvojJgTNG
IKkaXQDYgx8ILohj 17-627-663-8014 quickly regular
requests are furiously. pending deposits wake
7937.930 Supplier#000009012 ROMANIA
83995 Manufacturer#2
iUiTziH,Ek3i4lwSgunXMgrcTzwdb 29-250-925-
9690 blithely bold ideas haggle quickly final, regular request
7914.450 Supplier#000001013 RUSSIA
125988 Manufacturer#2
riRcntps4KEDtYScjpMIWeYF6mNnR 32-194-698-
3365 final, ironic theodolites alongside of the ironic

7912.910 Supplier#000004211 GERMANY
159180 Manufacturer#5
2wQRVovHrm3,v03IKzfTd,1PYsFXQFFOG 17-266-
947-7315 final requests integrate slyly above the silent, even
7912.910 Supplier#000004211 GERMANY
184210 Manufacturer#4
2wQRVovHrm3,v03IKzfTd,1PYsFXQFFOG 17-266-
947-7315 final requests integrate slyly above the silent, even
7894.560 Supplier#000007981 GERMANY
85472 Manufacturer#4 NSJ96vMROAbeXP
17-963-404-3760 regular, even theodolites integrate
carefully. bold, special theodolites are slyly fluffily iron
7887.080 Supplier#000009792 GERMANY
164759 Manufacturer#3
Y28ITVeYriT3kIGdV2K8fSZ V2UqT5H1Otz 17-988-
938-4296 pending, ironic packages sleep among the
carefully ironic accounts. quickly final accounts
7871.500 Supplier#000007206 RUSSIA
104695 Manufacturer#1 3w
fNCnrVmvJJE95sgWZzvW 32-432-452-7731
furiously dogged pinto beans cajole. bold, express notornis
until the slyly pending
7852.450 Supplier#000005864 RUSSIA
8363 Manufacturer#4 WCNfBPZeSXh3h,c
32-454-883-3821 blithely regular deposits
7850.660 Supplier#000001518 UNITED
KINGDOM 86501 Manufacturer#1
ONda3YJiHKJOC 33-730-383-3892
furiously final accounts wake carefully idle requests. even
dolphins wake acc
7843.520 Supplier#000006683 FRANCE
11680 Manufacturer#4
220JGkiv01Y00oCFwUGfvlbhzCdy 16-464-517-
8943 carefully bold accounts doub

Number of rows retrieved is: 100

Stop timestamp 06/27/03 16:55:27.770
Query Time = 1.9 secs

Query 3

Start timestamp 06/27/03 16:56:19.320

-- Query 03 - Var_0 Rev_01 - Shipping Priority Query

Tag: Q3 Stream: -1 Sequence number: 11

```
select
l_orderkey,
sum(l_extendedprice * (1 - l_discount)) as revenue,
o_orderdate,
o_shippriority
from
tpcd.customer,
tpcd.orders,
tpcd.lineitem
where
c_mktsegment = 'BUILDING'
and c_custkey = o_custkey
and l_orderkey = o_orderkey
and o_orderdate < date ('1995-03-15')
and l_shipdate > date ('1995-03-15')
group by
```

l_orderkey,
o_orderdate,
o_shippriority
order by
revenue desc,
o_orderdate
fetch first 10 rows only

L_ORDERKEY REVENUE O_ORDERDATE
O_SHIPPRIORITY

2456423	406181.011	1995-03-05	0
3459808	405838.699	1995-03-04	0
492164	390324.061	1995-02-19	0
1188320	384537.936	1995-03-09	0
2435712	378673.056	1995-02-26	0
4878020	378376.795	1995-03-12	0
5521732	375153.922	1995-03-13	0
2628192	373133.309	1995-02-22	0
993600	371407.460	1995-03-05	0
2300070	367371.145	1995-03-13	0

Number of rows retrieved is: 10

Stop timestamp 06/27/03 16:56:26.950
Query Time = 7.6 secs

Query 4

Start timestamp 06/27/03 16:56:30.780

-- Query 04 - Var_0 Rev_01 - Order Priority Checking Query

Tag: Q4 Stream: -1 Sequence number: 14
Select
o_orderpriority,
count(*) as order_count
from
tpcd.orders
where
o_orderdate >= date ('1993-07-01')
and o_orderdate < date ('1993-07-01') + 3 month
and exists (
select
*
from
tpcd.lineitem
where
l_orderkey = o_orderkey
and l_commitdate < l_receiptdate
)
group by
o_orderpriority
order by
o_orderpriority

O_ORDERPRIORITY ORDER_COUNT

1-URGENT	10594
2-HIGH	10476
3-MEDIUM	10410
4-NOT SPECIFIED	10556
5-LOW	10487

Number of rows retrieved is: 5

Stop timestamp 06/27/03 16:56:32.210
Query Time = 1.4 secs

Query 5

Start timestamp 06/27/03 16:56:40.210

-- Query 05 - Var_0 Rev_02 Local Supplier Volume Query

Tag: Q5 Stream: -1 Sequence number: 20

select
n_name,
sum(l_extendedprice * (1 - l_discount)) as revenue
from
tpcd.customer,
tpcd.orders,
tpcd.lineitem,
tpcd.supplier,
tpcd.nation,
tpcd.region
where
c_custkey = o_custkey
and o_orderkey = l_orderkey
and l_suppkey = s_suppkey
and c_nationkey = s_nationkey
and s_nationkey = n_nationkey
and n_regionkey = r_regionkey
and r_name = 'ASIA'
and o_orderdate >= date ('1994-01-01')
and o_orderdate < date ('1994-01-01') + 1 year
group by
n_name
order by
revenue desc

N_NAME	REVENUE
INDONESIA	55502041.170
VIETNAM	55295086.997
CHINA	53724494.257
INDIA	52035512.000
JAPAN	45410175.695

Number of rows retrieved is: 5

Stop timestamp 06/27/03 16:56:42.860
Query Time = 2.6 secs

Query 6

Start timestamp 06/27/03 16:55:52.010

-- Query 06 - Var_0 Rev_01 - Forecasting Revenue Change Query

Tag: Q6 Stream: -1 Sequence number: 5

select
sum(l_extendedprice * l_discount) as revenue

```

from
tpcd.lineitem
where
l_shipdate >= date ('1994-01-01')
and l_shipdate < date ('1994-01-01') + 1 year
and l_discount between .06 - 0.01 and .06 + 0.01
and l_quantity < 24

```

```

REVENUE
-----
123141078.228

```

Number of rows retrieved is: 1

Stop timestamp 06/27/03 16:55:52.190
Query Time = 0.2 secs

Query 7

Start timestamp 06/27/03 16:56:42.860

-- Query 07 - Var_0 Rev_01 - Volume Shipping Query

Tag: Q7 Stream: -1 Sequence number: 21

```

select
supp_nation,
cust_nation,
l_year,
sum(volume) as revenue
from
(
select
n1.n_name as supp_nation,
n2.n_name as cust_nation,
year(l_shipdate) as l_year,
l_extendedprice * (1 - l_discount) as volume
from
tpcd.supplier,
tpcd.lineitem,
tpcd.orders,
tpcd.customer,
tpcd.nation n1,
tpcd.nation n2
where
s_suppkey = l_suppkey
and o_orderkey = l_orderkey
and c_custkey = o_custkey
and s_nationkey = n1.n_nationkey
and c_nationkey = n2.n_nationkey
and (
(n1.n_name = 'FRANCE' and n2.n_name = 'GERMANY')
or (n1.n_name = 'GERMANY' and n2.n_name = 'FRANCE')
)
and l_shipdate between date('1995-01-01') and date('1996-12-31')
) as shipping
group by
supp_nation,
cust_nation,
l_year
order by
supp_nation,
cust_nation,

```

l_year

SUPP_NATION	CUST_NATION	L_YEAR	REVENUE
FRANCE	GERMANY	1995	54639732.734
FRANCE	GERMANY	1996	54633083.308
GERMANY	FRANCE	1995	52531746.670
GERMANY	FRANCE	1996	52520549.022

Number of rows retrieved is: 4

Stop timestamp 06/27/03 16:56:45.730
Query Time = 2.9 secs

Query 8

Start timestamp 06/27/03 16:56:04.310

-- Query 08 - Var_0 Rev_01 - National Market Share Query

Tag: Q8 Stream: -1 Sequence number: 8

```

select
o_year,
sum(case
when nation = 'BRAZIL' then volume
else 0
end) / sum(volume) as mkt_share
from
(
select
year(o_orderdate) as o_year,
l_extendedprice * (1 - l_discount) as volume,
n2.n_name as nation
from
tpcd.part,
tpcd.supplier,
tpcd.lineitem,
tpcd.orders,
tpcd.customer,
tpcd.nation n1,
tpcd.nation n2,
tpcd.region
where
p_partkey = l_partkey
and s_suppkey = l_suppkey
and l_orderkey = o_orderkey
and o_custkey = c_custkey
and c_nationkey = n1.n_nationkey
and n1.n_regionkey = r_regionkey
and r_name = 'AMERICA'
and s_nationkey = n2.n_nationkey
and o_orderdate between date('1995-01-01') and date('1996-12-31')
and p_type = 'ECONOMY ANODIZED STEEL'
) as all_nations
group by
o_year

```


order by
o_year

O_YEAR	MKT_SHARE
1995	0.034
1996	0.041

Number of rows retrieved is: 2

Stop timestamp 06/27/03 16:56:09.840
Query Time = 5.5 secs

Query 9

Start timestamp 06/27/03 16:55:27.770

-- Query 09 - Var_0 Rev_01 - Product Type Profit Measure
Query

Tag: Q9 Stream: -1 Sequence number: 3

```
select
nation,
o_year,
sum(amount) as sum_profit
from
(
select
n_name as nation,
year(o_orderdate) as o_year,
l_extendedprice * (1 - l_discount) - ps_supplycost *
l_quantity as amount
from
tpcd.part,
tpcd.supplier,
tpcd.lineitem,
tpcd.partsupp,
tpcd.orders,
tpcd.nation
where
s_suppkey = l_suppkey
and ps_suppkey = l_suppkey
and ps_partkey = l_partkey
and p_partkey = l_partkey
and o_orderkey = l_orderkey
and s_nationkey = n_nationkey
and p_name like '%green%'
) as profit
group by
nation,
o_year
order by
nation,
o_year desc
```

NATION	O_YEAR	SUM_PROFIT
ALGERIA	1998	31342867.235
ALGERIA	1997	57138193.023
ALGERIA	1996	56140140.133
ALGERIA	1995	53051469.653
ALGERIA	1994	53867582.129
ALGERIA	1993	54942718.132

ALGERIA	1992	54628034.713
ARGENTINA	1998	30211185.708
ARGENTINA	1997	50805741.752
ARGENTINA	1996	51923746.576
ARGENTINA	1995	49298625.767
ARGENTINA	1994	50835610.109
ARGENTINA	1993	51646079.178

... Rows Deleted ...

UNITED STATES	1997	50077306.419
UNITED STATES	1996	48048649.470
UNITED STATES	1995	48809032.423
UNITED STATES	1994	49296747.183
UNITED STATES	1993	48029946.801
UNITED STATES	1992	48671944.498
VIETNAM	1998	30442736.059
VIETNAM	1997	50309179.794
VIETNAM	1996	50488161.410
VIETNAM	1995	49658284.613
VIETNAM	1994	50596057.261
VIETNAM	1993	50953919.152
VIETNAM	1992	49613838.315

Number of rows retrieved is: 175

Stop timestamp 06/27/03 16:55:51.430
Query Time = 23.7 secs

Query 10

Start timestamp 06/27/03 16:56:37.280

-- Query 10 - Var_0 Rev_01 - Returned Item Reporting
Query

Tag: Q10 Stream: -1 Sequence number: 18

```
select
c_custkey,
c_name,
sum(l_extendedprice * (1 - l_discount)) as revenue,
c_acctbal,
n_name,
c_address,
c_phone,
c_comment
from
tpcd.customer,
tpcd.orders,
tpcd.lineitem,
tpcd.nation
where
c_custkey = o_custkey
and l_orderkey = o_orderkey
and o_orderdate >= date ('1993-10-01')
and o_orderdate < date ('1993-10-01') + 3 month
and l_returnflag = 'R'
and c_nationkey = n_nationkey
group by
c_custkey,
c_name,
c_acctbal,
c_phone,
```

57040 Customer#000057040 734235.245
632.870 JAPAN Eioyzzf4pp
22-895-641-3466 requests sleep blithely about the furiously i
143347 Customer#000143347 721002.695
2557.470 EGYPT 1aReFYv,Kw4
14-742-935-3718 fluffily bold excuses haggle finally after
the u
60838 Customer#000060838 679127.308
2454.770 BRAZIL
64EaJ5vMAHWJIBOXkIpNc2RJiWE 12-913-494
9813 furiously even pinto beans integrate under the ruthless
foxes; ironic, even dolphins across the slyl
101998 Customer#000101998 637029.567
3790.890 UNITED KINGDOM
01c9CILnNtfOQYmZj 33-593-865-6378
accounts doze blithely! enticing, final deposits sleep blithely
special accounts. slyly express accounts pla
125341 Customer#000125341 633508.086
4983.510 GERMANY
S29ODD6bceU8QSuueJznkNaK 17-582-695-
5962 quickly express requests wake quickly blithely
25501 Customer#000025501 620269.785
7725.040 ETHIOPIA
W556MXuoiaYCCZaMJI,Rn0B4ACUGdkQ8DZ 15-
874-808-6793 quickly special requests sleep evenly among
the special deposits. special deposi
115831 Customer#000115831 596423.867
5098.100 FRANCE rFeBbEEyk dl
ne7zV5fDrmiq1oK09wV7pxqCgIc 16-715-386-3788
carefully bold excuses sleep alongside of the thinly idle
84223 Customer#000084223 594998.024
528.650 UNITED KINGDOM nAVZCs6BaWap
rrM27N2qBznzc5WBauxbA 33-442-824-8191 pending,
final ideas haggle final requests. unusual, regular asymptotes
affix according to the even foxes.
54289 Customer#000054289 585603.392
5583.020 IRAN vXCxoCsU0Bad5JQI ,oobkZ
20-834-292-4707 express requests sublute blithely regular
requests. regular, even ideas solv e.
39922 Customer#000039922 584878.113
7321.110 GERMANY
Zgy4s50l2GKN4pLDPBU8m342glw6R 17-147-757-
8036 even pinto beans haggle. slyly bold accounts inte
6226 Customer#000006226 576783.761
2230.090 UNITED KINGDOM
8gPu8, NPGkfyQQ0hclYUGPIBWc,ybP5g, 33-657-
701-3391 quickly final requests against the regular
instructions wake blithely final instructions. pa
922 Customer#000000922 576767.533
3869.250 GERMANY
Az9RFaut7NkPnc5zSD2PwHgVwr4jRzq 17-945-916-
9648 boldly final requests cajole blith
147946 Customer#000147946 576455.132
2030.130 ALGERIA
iANyZHjghyy7AjahOpTrYyhJ 10-886-956-3143
furiously even accounts are blithely above the furiousl

115640 Customer#000115640 569341.193
6436.100 ARGENTINA Vtgfia9qI 7EpHgecU1X
11-411-543-4901 final instructions are slyly according to the
73606 Customer#000073606 568656.858
1785.670 JAPAN xuR0Tro5yChDfOCrjkd2ol
22-437-653-6966 furiously bold orbits about the furiously
busy requests wake against the furiously quiet theodolites. d
110246 Customer#000110246 566842.981
7763.350 VIETNAM 7KzflgX MDOq7sOkI
31-943-426-9837 dolphins sleep blithely among the slyly
final
142549 Customer#000142549 563537.237
5085.990 INDONESIA
ChqEoK43OysjdHbtKCp6dKqjNyvv9i 19-955-562-
2398 regular, unusual dependencies boost slyly; ironic
attainments fly fluffily into the unusual packages?
146149 Customer#000146149 557254.986
1791.550 ROMANIA s87fvzFQpU
29-744-164-6487 silent, unusual requests detect quickly
slyly regul
52528 Customer#000052528 556397.351
551.790 ARGENTINA NFztyTOR10UOJ
11-208-192-3205 unusual requests detect. slyly dogged
theodolites use slyly. deposit
23431 Customer#000023431 554269.536
3381.860 ROMANIA HgiV0pqhala9aydNollb
29-915-458-2654 instructions nag quickly. furiously bold
accounts cajol

Number of rows retrieved is: 20

Stop tim estamp 06/27/03 16:56:39.000
Query Time = 1.7 secs

Query 11

Start timestamp 06/27/03 16:56:32.210

-- Query 11 - Var_0 Rev_01 - Important Stock Identification
Query

Tag: Q11 Stream: -1 Sequence number: 15

```
select
ps_partkey,
sum(ps_supplycost * ps_availqty) as value
from
tpcd.partsupp,
tpcd.supplier,
tpcd.nation
where
ps_suppkey = s_suppkey
and s_nationkey = n_nationkey
and n_name = 'GERMANY'
group by
ps_partkey having
sum(ps_supplycost * ps_availqty) > (
select
sum(ps_supplycost * ps_availqty) * 0.0001000000
from
tpcd.partsupp,
tpcd.supplier,
tpcd.nation
where
```

```
ps_suppkey = s_suppkey
and s_nationkey = n_nationkey
and n_name = 'GERMANY'
)
order by
value desc
```

PS_PARTKEY	VALUE
129760	17538456.860
166726	16503353.920
191287	16474801.970
161758	16101755.540
34452	15983844.720
139035	15907078.340
9403	15451755.620
154358	15212937.880
38823	15064802.860
85606	15053957.150
33354	14408297.400
154747	14407580.680

... Rows Deleted ...

79373	7896186.000
113808	7893353.880
27901	7892952.000
128820	7892882.720
25891	7890511.200
122819	7888881.020
154731	7888301.330
101674	7879324.600
51968	7879102.210
72073	7877736.110
5182	7874521.730

Number of rows retrieved is: 1048

Stop timestamp 06/27/03 16:56:32.630
Query Time = 0.4 secs

Query 12

Start timestamp 06/27/03 16:56:45.730

-- Query 12 - Var_0 Rev_02 - Shipping Modes and Order
Priority Query

Tag: Q12 Stream: -1 Sequence number: 22

```
select
l_shipmode,
sum(case
when o_orderpriority = '1-URGENT'
or o_orderpriority = '2-HIGH'
then 1
else 0
end) as high_line_count,
sum(case
when o_orderpriority <> '1-URGENT'
and o_orderpriority <> '2-HIGH'
then 1
else 0
end) as low_line_count
```

```
from
tpcd.orders,
tpcd.lineitem
where
o_orderkey = l_orderkey
and l_shipmode in ('MAIL', 'SHIP')
and l_commitdate < l_receiptdate
and l_shipdate < l_commitdate
and l_receiptdate >= date ('1994-01-01')
and l_receiptdate < date ('1994-01-01') + 1 year
group by
l_shipmode
order by
l_shipmode
```

L_SHIPMODE HIGH_LINE_COUNT
LOW_LINE_COUNT

MAIL	6202	9324
SHIP	6200	9262

Number of rows retrieved is: 2

Stop timestamp 06/27/03 16:56:48.370
Query Time = 2.6 secs

Query 13

Start timestamp 06/27/03 16:56:15.950

-- Query 13 - Var_0 Rev_01 - Customer Distribution Query

Tag: Q13 Stream: -1 Sequence number: 10

```
select
c_count,
count(*) as custdist
from
(
select
c_custkey,
count(o_orderkey)
from
tpcd.customer left outer join tpcd.orders on
c_custkey = o_custkey
and o_comment not like '%special%requests%'
group by
c_custkey
) as c_orders (c_custkey, c_count)
group by
c_count
order by
custdist desc,
c_count desc
```

C_COUNT	CUSTDIST
0	50004
9	6641
10	6566
11	6058
8	5949
12	5553
13	4989

19	4748
7	4707
18	4625
15	4552
17	4530
14	4484
20	4461
16	4323
21	4217
22	3730
6	3334
23	3129
24	2622
25	2079
5	1972
26	1593
27	1185
4	1033
28	869
29	559
3	398
30	373
31	235
2	144
32	128
33	71
34	48
35	33
1	23
36	17
37	7
40	4
38	4
39	2
41	1

Number of rows retrieved is: 42

Stop timestamp 06/27/03 16:56:19.320
Query Time = 3.4 secs

Query 14

Start timestamp 06/27/03 16:55:22.730

--#SET ROWS_OUT -1 ROWS_FETCH -1

-- Query 14 - Var_0 Rev_01 - Promotion Effect Query

Tag: Q14 Stream: -1 Sequence number: 1

```
select
100.00 * sum(case
when p_type like 'PROMO%'
then l_extendedprice * (1 - l_discount)
else 0
end) / sum(l_extendedprice * (1 - l_discount)) as
promo_revenue
from
tpcd.lineitem,
tpcd.part
where
l_partkey = p_partkey
and l_shipdate >= date ('1995-09-01')
and l_shipdate < date ('1995-09-01') + 1 month
```

PROMO_REVENUE

16.381

Number of rows retrieved is: 1

Stop timestamp 06/27/03 16:55:25.870
Query Time = 3.1 secs

Query 15

Start timestamp 06/27/03 16:56:32.630

-- Query 15 - Var_a Rev_01 - Top Supplier Query

Tag: Q15a Stream: -1 Sequence number: 16

```
with revenue (supplier_no, total_revenue) as (
select
l_suppkey,
sum(l_extendedprice * (1-l_discount))
from
tpcd.lineitem
where
l_shipdate >= date ('1996-01-01')
and l_shipdate < date ('1996-01-01') + 3 month
group by
l_suppkey
)
select
s_suppkey,
s_name,
s_address,
s_phone,
total_revenue
from
tpcd.supplier,
revenue
where
s_suppkey = supplier_no
and total_revenue = (
select
max(total_revenue)
from
revenue
)
order by
s_suppkey
```

S_SUPPKEY	S_NAME	S_ADDRESS
S_PHONE	TOTAL_REVENUE	

8449 Supplier#000008449 Wp34zim9qYFbVctdW
20-469-856-8873 1772627.209

Number of rows retrieved is: 1

Stop timestamp 06/27/03 16:56:32.950
Query Time = 0.3 secs

Query 16

Start timestamp 06/27/03 16:56:29.640

-- Query 16 - Var_0 Rev_01 - Parts/Supplier Relationship Query

Tag: Q16 Stream: -1 Sequence number: 13

```
select
p_brand,
p_type,
p_size,
count(distinct ps_suppkey) as supplier_cnt
from
tpcd.partsupp,
tpcd.part
where
p_partkey = ps_partkey
and p_brand <> 'Brand#45'
and p_type not like 'MEDIUM POLISHED%'
and p_size in (49, 14, 23, 45, 19, 3, 36, 9)
and ps_suppkey not in (
select
s_suppkey
from
tpcd.supplier
where
s_comment like '%Customer%Complaints%'
)
group by
p_brand,
p_type,
p_size
order by
supplier_cnt desc,
p_brand,
p_type,
p_size
```

P_BRAND	P_TYPE	P_SIZE	SUPPLIER_CNT
Brand#41	MEDIUM BRUSHED TIN	3	28
Brand#54	STANDARD BRUSHED COPPER	14	27
Brand#11	STANDARD BRUSHED TIN	23	24
Brand#11	STANDARD BURNISHED BRASS	36	24
Brand#15	MEDIUM ANODIZED NICKEL	3	24
Brand#15	SMALL ANODIZED BRASS	45	24
Brand#15	SMALL BURNISHED NICKEL	19	24
Brand#21	MEDIUM ANODIZED COPPER	3	24
Brand#22	SMALL BRUSHED NICKEL	3	24
Brand#22	SMALL BURNISHED BRASS	19	24

.... Rows Deleted

Brand#32	STANDARD ANODIZED COPPER	23
3		
Brand#33	SMALL ANODIZED BRASS	9
3		
Brand#35	MEDIUM ANODIZED TIN	19
3		
Brand#51	SMALL PLATED BRASS	23
3		
Brand#52	MEDIUM BRUSHED BRASS	45
3		
Brand#53	MEDIUM BRUSHED TIN	45
3		
Brand#54	ECONOMY POLISHED BRASS	9
3		
Brand#55	PROMO PLATED BRASS	19
3		
Brand#55	STANDARD PLATED TIN	49
3		

Number of rows retrieved is: 18314

Stop timestamp 06/27/03 16:56:30.780
Query Time = 1.1 secs

Query 17

Start timestamp 06/27/03 16:55:52.190

-- Query 17 - Var_0 Rev_01 - Small-Quantity-Order Revenue Query

Tag: Q17 Stream: -1 Sequence number: 6

```
select
sum(l_extendedprice) / 7.0 as avg_yearly
from
tpcd.lineitem,
tpcd.part
where
p_partkey = l_partkey
and p_brand = 'Brand#23'
and p_container = 'MED BOX'
and l_quantity < (
select
0.2 * avg(l_quantity)
from
tpcd.lineitem
where
l_partkey = p_partkey
)
```

AVG_YEARLY
348406.054

Number of rows retrieved is: 1

Stop timestamp 06/27/03 16:55:53.270
Query Time = 1.1 secs

Query 18

Start timestamp 06/27/03 16:55:53.270

-- Query 18 - Var_0 Rev_01 - Large Volume Customer Query

Tag: Q18 Stream: -1 Sequence number: 7

```
select
c_name,
c_custkey,
o_orderkey,
o_orderdate,
o_totalprice,
sum(l_quantity)
from
tpcd.customer,
tpcd.orders,
tpcd.lineitem
where
o_orderkey in (
select
l_orderkey
from
tpcd.lineitem
group by
l_orderkey having
sum(l_quantity) > 300
)
and c_custkey = o_custkey
and o_orderkey = l_orderkey
group by
c_name,
c_custkey,
o_orderkey,
o_orderdate,
o_totalprice
order by
o_totalprice desc,
o_orderdate
fetch first 100 rows only
```

C_NAME	C_CUSTKEY	O_ORDERKEY
O_ORDERDATE	O_TOTALPRICE	6
Customer#000128120	128120	4722021 1994-04-07
544089.090	323.000	
Customer#000144617	144617	3043270 1997-02-12
530604.440	317.000	
Customer#000013940	13940	2232932 1997-04-13
522720.610	304.000	
Customer#000066790	66790	2199712 1996-09-30
515531.820	327.000	
Customer#000046435	46435	4745607 1997-07-03
508047.990	309.000	
Customer#000015272	15272	3883783 1993-07-28
500241.330	302.000	
Customer#000146608	146608	3342468 1994-06-12
499794.580	303.000	
Customer#000096103	96103	5984582 1992-03-16
494398.790	312.000	
Customer#000024341	24341	1474818 1992-11-15
491348.260	302.000	
Customer#000137446	137446	5489475 1997-05-23
487763.250	311.000	

... Rows Deleted ...

Customer#000105410	105410	4478371 1996-03-05
412754.510	302.000	
Customer#000149842	149842	5156581 1994-05-30
411329.350	302.000	
Customer#000010129	10129	5849444 1994-03-21
409129.850	309.000	
Customer#000069904	69904	1742403 1996-10-19
408513.000	305.000	
Customer#000017746	17746	6882 1997-04-09
408446.930	303.000	
Customer#000013072	13072	1481925 1998-03-15
399195.470	301.000	
Customer#000082441	82441	857959 1994-02-07
382579.740	305.000	
Customer#000088703	88703	2995076 1994-01-30
363812.120	302.000	

Number of rows retrieved is: 57

Stop timestamp 06/27/03 16:56:04.310

Query Time = 11.0 secs

Query 19

Start timestamp 06/27/03 16:56:39.000

-- Query 19 - Var_0 Rev_01 - Discounted Revenue Query

Tag: Q19 Stream: -1 Sequence number: 19

```
select
sum(l_extendedprice* (1 - l_discount)) as revenue
from
tpcd.lineitem,
tpcd.part
where
(
p_partkey = l_partkey
and p_brand = 'Brand#12'
and p_container in ('SM CASE', 'SM BOX', 'SM PACK', 'SM PKG')
and l_quantity >= 1 and l_quantity <= 1 + 10
and p_size between 1 and 5
and l_shipmode in ('AIR', 'AIR REG')
and l_shipinstruct = 'DELIVER IN PERSON'
)
or
(
p_partkey = l_partkey
and p_brand = 'Brand#23'
and p_container in ('MED BAG', 'MED BOX', 'MED PKG', 'MED PACK')
and l_quantity >= 10 and l_quantity <= 10 + 10
and p_size between 1 and 10
and l_shipmode in ('AIR', 'AIR REG')
and l_shipinstruct = 'DELIVER IN PERSON'
)
or
(
p_partkey = l_partkey
and p_brand = 'Brand#34'
```

```

and p_container in ('LG CASE', 'LG BOX', 'LG PACK', 'LG
PKG')
and l_quantity >= 20 and l_quantity <= 20 + 10
and p_size between 1 and 15
and l_shipmode in ('AIR', 'AIR REG')
and l_shipinstruct = 'DELIVER IN PERSON'
)

```

```

REVENUE
-----
3083843.058

```

Number of rows retrieved is: 1

Stop timestamp 06/27/03 16:56:40.210
Query Time = 1.2 secs

Query 20

Start timestamp 06/27/03 16:55:51.430

-- Query 20 - Var_0 Rev_01 - Potential Part Promotion
Query

Tag: Q20 Stream: -1 Sequence number: 4

```

select
s_name,
s_address
from
tpcd.supplier,
tpcd.nation
where
s_suppkey in (
select
ps_suppkey
from
tpcd.partsupp
where
ps_partkey in (
select
p_partkey
from
tpcd.part
where
p_name like 'forest%'
)
and ps_availqty > (
select
0.5 * sum(l_quantity)
from
tpcd.lineitem
where
l_partkey = ps_partkey
and l_suppkey = ps_suppkey
and l_shipdate >= date ('1994-01-01')
and l_shipdate < date ('1994-01-01') + 1 year
)
)
and s_nationkey = n_nationkey
and n_name = 'CANADA'
order by
s_name

```

S_NAME	S_ADDRESS
Supplier#000000020	iybAE,RmTymrZVYafZva2SH,j
Supplier#000000091	YV45D7TkfdQanOOZ7q9QxkyGUapU1oOWU6q3
Supplier#000000197	YC2Acon6kjY3zj3Fbxs2k4Vdf7X0cd2F
Supplier#000000226	83qOdU2EYRdPQAQhEtn
GRZEd	
Supplier#000000285	Br7e1nnt1yxrw6ImgpJ7YdhFDjuBf
Supplier#000000378	FfbhyCxWvcPrO8ltp9
Supplier#000000402	i9Sw4DoyMhzhKXCH9By,AYSgmD
Supplier#000000530	0qwCMwobKY
OcmLyfRXlagA8ukENJv,	
Supplier#000000688	D
fw5ocppmZpYBBIPI718hCihLDZ5KhKX	
Supplier#000000710	f19YPvOyb
QoYwjKC,oPycpGfieBAcwKJo	
Supplier#000000736	l6i2nMwVuovfKnuVgaSGK2rDy65DIAFLegIL7
Supplier#000000761	zLSLeLQUj2XrvTTFnv7WAcYZGvvMTx882d4
Supplier#000000884	bmhEShejaS

... Rows Deleted ...

```

Supplier#000009601
51m637bO,Rw5DnHWFUvLacRx9
Supplier#000009709
rRnCbHYgDgl9PZYnyWKVYSUW0vKg
Supplier#000009753
wLhVecRmd7PkJf4FBnGK7Z
Supplier#000009796
z,y4ldmr15DOvPUqYG
Supplier#000009799
4wNjXGa4OKWl
Supplier#000009811
E3iuyq7UnZxU7oPZIE2Gu6
Supplier#000009812
APFRMy3lCbGFga53n5t9DxzFPQPgnjrGt32
Supplier#000009862
rJzweWeN58
Supplier#000009868
ROjGgx5gvtkmnUUoeyy7v
Supplier#000009869
ucLqxzrpBTRMewGSM29t0rNTM30g1Tt8Xgg3mKag
Supplier#000009899
7XdpAHzrzt,UFZE
Supplier#000009974
7wJ,J5DKcxSU4Kp1cQLpbcAvB5AsvKT

```

Number of rows retrieved is: 204

Stop timestamp 06/27/03 16:55:52.010
Query Time = 0.6 secs

Query 21

Start timestamp 06/27/03 16:56:09.840

-- Query 21 - Var_0 Rev_01 - Suppliers Who Kept Orders
Waiting Query

Tag: Q21 Stream: -1 Sequence number: 9

```

select
s_name,
count(*) as numwait
from

```

```

tpcd.supplier,
tpcd.lineitem l1,
tpcd.orders,
tpcd.nation
where
s_suppkey = l1.l_suppkey
and o_orderkey = l1.l_orderkey
and o_orderstatus = 'F'
and l1.l_receiptdate > l1.l_commitdate
and exists (
select
*
from
tpcd.lineitem l2
where
l2.l_orderkey = l1.l_orderkey
and l2.l_suppkey <> l1.l_suppkey
)
and not exists (
select
*
from
tpcd.lineitem l3
where
l3.l_orderkey = l1.l_orderkey
and l3.l_suppkey <> l1.l_suppkey
and l3.l_receiptdate > l3.l_commitdate
)
and s_nationkey = n_nationkey
and n_name = 'SAUDI ARABIA'
group by
s_name
order by
numwait desc,
s_name
fetch first 100 rows only

```

S_NAME	NUMWAIT
--------	---------

Supplier#000002829	20
Supplier#000005808	18
Supplier#000000262	17
Supplier#000000496	17
Supplier#000002160	17
Supplier#000002301	17
Supplier#000002540	17
Supplier#000003063	17
Supplier#000005178	17
Supplier#000008331	17
Supplier#000002005	16
Supplier#000002095	16
Supplier#000005799	16
Supplier#000005842	16
Supplier#000006450	16
Supplier#000006939	16
Supplier#000009200	16

... Rows Deleted ...

Supplier#000009564	13
Supplier#000009896	13
Supplier#000000379	12
Supplier#000000673	12
Supplier#000000762	12
Supplier#000000811	12
Supplier#000000821	12
Supplier#000001337	12
Supplier#000001916	12
Supplier#000001925	12
Supplier#000002039	12

Supplier#000002357	12
Supplier#000002483	12

Number of rows retrieved is: 100

Stop timestamp 06/27/03 16:56:15.950
Query Time = 6.1 secs

Query 22

Start timestamp 06/27/03 16:56:26.950

-- Query 22 - Var_0 Rev_01 - Global Sales Opportunity
Query

Tag: Q22 Stream: -1 Sequence number: 12

```

select
cntrycode,
count(*) as numcust,
sum(c_acctbal) as totacctbal
from
(
select
substr(c_phone, 1, 2) as cntrycode,
c_acctbal
from
tpcd.customer
where
substr(c_phone, 1, 2) in
('13', '31', '23', '29', '30', '18', '17')
and c_acctbal > (
select
avg(c_acctbal)
from
tpcd.customer
where
c_acctbal > 0.00
and substr(c_phone, 1, 2) in
('13', '31', '23', '29', '30', '18', '17')
)
and not exists (
select
*
from
tpcd.orders
where
o_custkey = c_custkey
)
) as custsale
group by
cntrycode
order by
cntrycode

```

CNTRYCODE	NUMCUST	TOTACCTBAL
13	888	6737713.990
17	861	6460573.720
18	964	7236687.400
23	892	6701457.950
29	948	7158866.630
30	909	6808436.130
31	922	6806670.180

Number of rows retrieved is: 7

Stop timestamp 06/27/03 16:56:29.640
Query Time = 2.7 secs

First Ten Rows of the Database

SELECT * FROM TPCD.REGION FETCH FIRST 10
ROWS ONLY

R_REGIONKEY	R_NAME	R_COMMENT
0 AFRICA	special	Tiresias about the
1 AMERICA	even, ironic	theodolites
2 ASIA	silent, bold	requests sleep slyly
3 EUROPE	special, bold	deposits haggle
4 MIDDLE EAST	furiously	unusual
5 record(s) selected.		

SELECT * FROM TPCD.NATION FETCH FIRST 10
ROWS ONLY

N_NATIONKEY	N_NAME	N_REGIONKEY
0 ALGERIA	0 final	accounts wake
5 ETHIOPIA	0 fluffily	ruthless
14 KENYA	0 ironic	requests boost.
15 MOROCCO	0 ideas	according to
16 MOZAMBIQUE	0 ironic	courts
1 ARGENTINA	1 idly	final
2 BRAZIL	1 always	pending pinto
3 CANADA	1 foxes	among the bold
17 PERU	1 final,	final accounts
24 UNITED STATES	1 blithely	regular
10 record(s) selected.		

SELECT * FROM TPCD.PART FETCH FIRST 10 ROWS
ONLY

P_PARTKEY	P_NAME	P_MFGR	P_BRAND	P_TYPE	P_SIZE	P_CONTAINER	P_RETAILPRICE	P_COMMENT
10	floral moccasin royal powder burnished	Manufacturer#5	Brand#54	LARGE BURNISHED	STEEL	44 LG CAN	+9.100100000000000E+002	bold, ironic
11	chocolate turquoise sandy snow misty	Manufacturer#2	Brand#25	STANDARD	BURNISHED NICKEL	43 WRAP BOX	+9.110100000000000E+002	furiously
14	linen seashell burnished blue gainsboro	Manufacturer#1	Brand#13	SMALL POLISHED	STEEL	28 JUMBO BOX	+9.140100000000000E+002	special, regular
37	turquoise ivory orange sandy maroon	Manufacturer#4	Brand#45	LARGE POLISHED TIN	48 JUMBO BOX	+9.370300000000000E+002		blithely regular
39	rose dodger lace peru floral	Manufacturer#5	Brand#53	SMALL POLISHED TIN	43 JUMBO JAR	+9.390300000000000E+002		quickly bo
43	medium khaki chocolate rosy blush	Manufacturer#4	Brand#44	PROMO POLISHED	STEEL	5 WRAP CASE	+9.430400000000000E+002	carefully iro
47	sky firebrick red linen dim	Manufacturer#4	Brand#45	LARGE BURNISHED	BRASS	14 JUMBO PACK	+9.470400000000000E+002	bold, unusual a
49	blue tan cornsilk burlywood beige	Manufacturer#2	Brand#24	SMALL BURNISHED	TIN	31 MED DRUM	+9.490400000000000E+002	carefu
50	yellow cornflower royal blush almond	Manufacturer#3	Brand#33	LARGE ANODIZED	TIN	25 WRAP PKG	+9.500500000000000E+002	regular dinos ar
55	antique cream pale tomato rose	Manufacturer#2	Brand#23	ECONOMY BRUSHED	COPPER	9 MED BAG	+9.550500000000000E+002	furiously
10 record(s) selected.								

SELECT * FROM TPCD.SUPPLIER FETCH FIRST 10
ROWS ONLY

S_SUPPKEY	S_NAME	S_ADDRESS	S_NATIONKEY	S_PHONE	S_ACCTBAL	S_COMMENT
10	Supplier#000000010	Saygah3gYWMp72i PY	24	34-852-489-8585	+3.891910000000000E+003	ironic
49	Supplier#000000049	Nvq 6macF4GtJvz	24	34-211-567-6800	+9.915240000000000E+003	blithely
silent pinto beans hang slyly. blithely eve						

55 Supplier#000000055 OqdYSiOQeG4eGi636Tj
24 34-876-912-6007 +7.16215000000000E+003 special,
express deposits against the bold, fluffy pinto beans are even,
re

87 Supplier#000000087
WCw7URDj8zoZ7tqC3cpm7 24 34-860-
229-1674 +4.74666000000000E+003 pending, even
requests haggle slyly slyly spe

359 Supplier#000000359
J5HqPZnflcFMtlgwCnZPUI 24 34-121-
923-9858 +6.47658000000000E+003 silently special ideas
cajole quickly regu

405 Supplier#000000405 dIijVTX
n7M0NDEQvCA 24 34-728-545-7374
+3.21318000000000E+003 evenly bold sauternes outside the
fluffily silent acco

595 Supplier#000000595
CURZCs4l306M2ir8rFkgeYVg 24 34-354-
570-3604 +4.92260000000000E+003 ironic, unusual
excuses use blithely above the furiously unusual s

597 Supplier#000000597 CKt5G XZ5DBt
24 34-219-790-3864 +1.82873000000000E+003 special,
silent excuses nag blithely foxes. furious

7704 Supplier#000007704 mUcN2x,yodhb
24 34-319-784-1592 -9.25300000000000E+001 furiously
regular theodolites sleep across the c

7766 Supplier#000007766 yzh0KSi92Mx7QmFq
24 34-815-966-8428 +9.35673000000000E+003 ironic
deposits integrate silently even deposits! carefull

10 record(s) selected.

SELECT * FROM TPCD.PARTSUPP FETCH FIRST 10
ROWS ONLY

PS_PARTKEY PS_SUPPKEY PS_AVAILQTY
PS_SUPPLYCOST PS_COMMENT

10 11 2952 +9.96120000000000E+002
blithely even foxes nag furiously about the quickly ex
10 250011 3335 +6.73270000000000E+002
final, regular foxes cajole carefully about the blithely express
accounts. carefully regular platelets against the silent pinto
beans sleep carefully among the blithely regular foxes. final r
10 500011 5691 +1.64000000000000E+002
carefully express accounts wake ruthlessly. carefully ironic
frets haggle furi
10 750011 841 +3.74020000000000E+002
pending, pending requests may haggle sometimes. silent
pinto beans are blithe
11 12 4540 +7.09870000000000E+002
final packages mold after the carefully unusual requests.
quickly fi
11 250012 4729 +8.94900000000000E+002
regular packages sleep carefully fluffily ironic ac
11 500012 3708 +8.18740000000000E+002
slyly pending theodolites wake quickly unusual, express
accounts. fluffily regular requests cajole furiously quickly
even dugouts. slyly bold platelets
11 750012 3213 +4.71980000000000E+002
ideas nag regular instructions. regular, thin pinto beans
unwind furiously ironic accounts. quickly express platele
14 15 5278 +6.50070000000000E+002
quickly even deposits doze quickly pending, bold deposits.
carefully regular packages sublate carefully

14 250015 5334 +8.89500000000000E+002
express instructions affix quickly. slyly bold requests use.
special, express foxes haggle fluffily express deposits.
silently even pinto beans throughout the blithely iron

10 record(s) selected.

SELECT * FROM TPCD.CUSTOMER FETCH FIRST 10
ROWS ONLY

C_CUSTKEY C_NAME C_ADDRESS
C_NATIONKEY C_PHONE C_ACCTBAL
C_MKTSEGMENT C_COMMENT

5 Customer#000000005
KvpyuHCplrB84WgAiGV6sYpZq7Tj 3 13-
750-942-6364 +7.94470000000000E+002 HOUSEHOLD
blithely final instructions haggle; stealthy sauternes nod;
carefully regu

23 Customer#000000023 OdY
W13N7Be3OC5MpgfmcYss0Wn6TKT 3 13-
312-472-8245 +3.33202000000000E+003 HOUSEHOLD
unusual, regular packages wake. slyly unusual courts wake

40 Customer#000000040 gOnGWAyhSV1ofv
3 13-652-915-8939 +1.33530000000000E+003 BUILDING
slyly regular requests haggle furiously regular theodbl

186 Customer#000000186
BeVr6MzaobBENXRBC8pmOmkByMJI 3 13-
518-743-2576 +8.73750000000000E+003 HOUSEHOLD
furiously even requests haggle carefully alongside of the
blithe

303 Customer#000000303
5pSw0OIoNRcpyTEElgZ6zRMjJ0UGHdD 3
13-184-254-6407 +9.33957000000000E+003
AUTOMOBILE even deposits cajole slyly unusual
accounts. regular deposits along

343 Customer#000000343
ejvvSNHlkJVm8l1zpQINnN5yyJbA 3 13-877-
910-5134 +5.52136000000000E+003 HOUSEHOLD
blithely bold accounts boost furiously a

440 Customer#000000440
w4fKMgiBuGmV,nLn7NgJl1DoUWwNQMV8z 5,R
3 13-244-480-5751 +1.80904000000000E+003
MACHINERY fluffily final requests boost according to the
quiet deposits. carefully fina

447 Customer#000000447 hVZBzP8Pii
3 13-438-344-7007 +7.66598000000000E+003
HOUSEHOLD slyly dogged accounts grow along the slyly
regular pint

488 Customer#000000488
bBcMjFPTysSTaTdHcoO 3 13-513-778-
1881 -2.75580000000000E+002 AUTOMOBILE regular
attainments use bravely slyly unusual deposits. final, bold
deposits affix slyly a

520 Customer#000000520
yaOGc9Ve92Bi4F6e0GcheU2MmEOXJE0zqyDT sEA
3 13-612-111-7765 +8.31509000000000E+003
HOUSEHOLD platelets x-ray carefully furiously even
deposits. furiously regular acc

10 record(s) selected.

SELECT * FROM TPCD.ORDERS FETCH FIRST 10
ROWS ONLY

O_ORDERKEY O_CUSTKEY O_ORDERSTATUS
O_TOTALPRICE O_ORDERDATE
O_ORDERPRIORITY O_CLERK O_SHIPPRIORITY
O_COMMENT

18370753 7124551 F
+5.21271200000000E+004 01/01/1992 4-NOT SPECIFIED
Clerk#000020629 0 silent requests cajole furiously
after the carefully ironic asymptotes.
18410596 8938492 F
+1.33453350000000E+005 01/01/1992 4-NOT SPECIFIED
Clerk#000047651 0 ironic, even deposits about the
blithely spe
18414880 6996031 F
+2.01867390000000E+005 01/01/1992 4-NOT SPECIFIED
Clerk#000044509 0 slyly ruthless requests across the
slyl
18420099 9716683 F
+3.96174200000000E+004 01/01/1992 1-URGENT
Clerk#000070377 0 regular accounts serve blithely
18431392 9468784 F
+1.88954410000000E+005 01/01/1992 3-MEDIUM
Clerk#000088129 0 carefully regular requests wake
acco
18431936 2378627 F
+1.72791440000000E+005 01/01/1992 5-LOW
Clerk#000057186 0 quickly final foxes sleep fluffily
fluffily fina
18436929 11124052 F
+7.06889900000000E+004 01/01/1992 1-URGENT
Clerk#000050816 0 pinto beans above the quickly
bra
18462080 8742511 F
+2.02616990000000E+005 01/01/1992 2-HIGH
Clerk#000026254 0 furiously unusual pinto bean
18474852 571699 F
+1.78617920000000E+005 01/01/1992 4-NOT SPECIFIED
Clerk#000061296 0 foxes integrate above the fluffily
final
18605959 10433203 F
+1.14473590000000E+005 01/01/1992 2-HIGH
Clerk#000038360 0 ironic platelets about the bold
foxes sleep according to the carefully eve

10 record(s) selected.

SELECT * FROM TPCD.LINEITEM FETCH FIRST 10
ROWS ONLY

L_ORDERKEY L_PARTKEY L_SUPPKEY
L_LINENUMBER L_QUANTITY
L_EXTENDEDPRICE L_DISCOUNT
L_TAX L_RETURNFLAG L_LINESTATUS
L_SHIPDATE L_COMMITDATE L_RECEIPTDATE
L_SHIPINSTRUCT L_SHIPMODE L_COMMENT

1054181 1621693 621694 1
+4.50000000000000E+001 +7.26574500000000E+004
+3.00000000000000E-002 +8.00000000000000E-002 R
F 01/02/1992 02/05/1992 01/15/1992 NONE
MAIL even instructions kindle furio
5018977 8203867 203868 1
+2.00000000000000E+001 +3.54090000000000E+004
+0.00000000000000E+000 +0.00000000000000E+000 A

F 01/02/1992 03/19/1992 01/15/1992 NONE
SHIP quickly ironic excu
5431079 7886870 636892 1
+1.20000000000000E+001 +2.22777600000000E+004
+3.00000000000000E-002 +8.00000000000000E-002 R
F 01/02/1992 03/29/1992 02/01/1992 NONE
MAIL permanent, final requests sleep along th
12493984 9126257 876285 4
+6.00000000000000E+000 +7.69680000000000E+003
+2.00000000000000E-002 +8.00000000000000E-002 A
F 01/02/1992 02/13/1992 01/29/1992 TAKE
BACK RETURN REG AIR foxes kindle. sl
14168833 15579328 329374 3
+4.90000000000000E+001 +6.89209500000000E+004
+9.00000000000000E-002 +5.00000000000000E-002 R
F 01/02/1992 02/01/1992 01/28/1992 TAKE
BACK RETURN SHIP quickly bold attainment
15413986 17992695 992696 4
+1.40000000000000E+001 +2.50152000000000E+004
+5.00000000000000E-002 +5.00000000000000E-002 A
F 01/02/1992 01/31/1992 01/04/1992 COLLECT
COD TRUCK bold, stealth
16579717 2652416 402423 1
+2.00000000000000E+000 +2.73656000000000E+003
+9.00000000000000E-002 +3.00000000000000E-002 R
F 01/02/1992 03/27/1992 01/17/1992 TAKE
BACK RETURN MAIL carefully regular packa
17035334 17746121 746122 6
+2.00000000000000E+001 +2.33248000000000E+004
+5.00000000000000E-002 +1.00000000000000E-002 R
F 01/02/1992 02/06/1992 01/05/1992 NONE
SHIP finally even platele
17294055 10645349 395380 5
+8.00000000000000E+000 +1.03504800000000E+004
+6.00000000000000E-002 +5.00000000000000E-002 R
F 01/02/1992 02/02/1992 01/04/1992 NONE
TRUCK final packages use sile
18436929 13317107 817134 1
+5.00000000000000E+000 +5.61720000000000E+003
+0.00000000000000E+000 +7.00000000000000E-002 A
F 01/02/1992 02/27/1992 01/26/1992 TAKE
BACK RETURN SHIP blithely regular request

10 record(s) selected.

Query Substitution Parameters

"Power stream Seed = 625195613"
-- TPC TPC-H Parameter Substitution (Version 1.3.0)
-- using 625195613 as a seed to the RNG
Q1 DELTA 65
Q2 SIZE 30
TYPE BRASS
REGION ASIA
Q3 SEGMENT BUILDING
DATE 1995-03-18
Q4 DATE 1995-11-01
Q5 REGION EUROPE
DATE 1996-01-01
Q6 DATE 1996-01-01
DISCOUNT 0.08
QUANTITY 25
Q7 NATION1 SAUDI ARABIA
NATION2 VIETNAM
Q8 NATION VIETNAM
REGION ASIA
TYPE STANDARD BURNISHED NICKEL

Q9	COLOR	beige
Q10	DATE	1993-12-01
Q11	NATION	CANADA
FRACTION	0.0000010000	
Q12	SHIPMODE1	SHIP
SHIPMODE2	FOB	
DATE	1996-01-01	
Q13	WORD1	express
WORD2	accounts	
Q14	DATE	1996-07-01
Q15	DATE	1993-06-01
Q16	BRAND	Brand#32
TYPE	ECONOMY BRUSHED	
SIZE1	33	
SIZE2	10	
SIZE3	19	
SIZE4	14	
SIZE5	34	
SIZE6	7	
SIZE7	41	
SIZE8	11	
Q17	BRAND	Brand#25
CONTAINER	JUMBO BAG	
Q18	QUANTITY	315
Q19	BRAND1	Brand#44
BRAND2	Brand#52	
BRAND3	Brand#45	
QUANTITY1	2	
QUANTITY2	12	
QUANTITY3	25	
Q20	COLOUR	powder
DATE	1997-01-01	
NATION	FRANCE	
Q21	NATION	RUSSIA
Q22	I1	16
I2	31	
I3	13	
I4	33	
I5	27	
I6	17	
I7	12	

"Throughput stream 1 = 625195614"

-- TPC TPC-H Parameter Substitution (Version 1.3.0)

-- using 625195614 as a seed to the RNG

Q1	DELTA	73
Q2	SIZE	18
TYPE	TIN	
REGION	AFRICA	
Q3	SEGMENT	BUILDING
DATE	1995-03-04	
Q4	DATE	1993-08-01
Q5	REGION	MIDDLE EAST
DATE	1996-01-01	
Q6	DATE	1996-01-01
DISCOUNT	0.05	
QUANTITY	25	
Q7	NATION1	JAPAN
NATION2	JORDAN	
Q8	NATION	JORDAN
REGION	MIDDLE EAST	
TYPE	PROMO BRUSHED NICKEL	
Q9	COLOR	white
Q10	DATE	1994-09-01
Q11	NATION	MOZAMBIQUE
FRACTION	0.0000010000	
Q12	SHIPMODE1	FOB
SHIPMODE2	SHIP	
DATE	1996-01-01	

Q13	WORD1	express
WORD2	accounts	
Q14	DATE	1996-10-01
Q15	DATE	1996-01-01
Q16	BRAND	Brand#22
TYPE	SMALL ANODIZED	
SIZE1	37	
SIZE2	46	
SIZE3	34	
SIZE4	44	
SIZE5	31	
SIZE6	3	
SIZE7	32	
SIZE8	6	
Q17	BRAND	Brand#21
CONTAINER	JUMBO PKG	
Q18	QUANTITY	312
Q19	BRAND1	Brand#41
BRAND2	Brand#35	
BRAND3	Brand#44	
QUANTITY1	7	
QUANTITY2	13	
QUANTITY3	21	
Q20	COLOUR	burnished
DATE	1995-01-01	
NATION	VIETNAM	
Q21	NATION	KENYA
Q22	I1	31
I2	25	
I3	26	
I4	15	
I5	18	
I6	33	
I7	14	

"Throughput stream 2 = 625195615"

-- TPC TPC-H Parameter Substitution (Version 1.3.0)

-- using 625195615 as a seed to the RNG

Q1	DELTA	81
Q2	SIZE	6
TYPE	COPPER	
REGION	EUROPE	
Q3	SEGMENT	BUILDING
DATE	1995-03-21	
Q4	DATE	1996-03-01
Q5	REGION	AFRICA
DATE	1996-01-01	
Q6	DATE	1996-01-01
DISCOUNT	0.05	
QUANTITY	25	
Q7	NATION1	EGYPT
NATION2	ETHIOPIA	
Q8	NATION	ETHIOPIA
REGION	AFRICA	
TYPE	PROMO PLATED BRASS	
Q9	COLOR	tan
Q10	DATE	1993-06-01
Q11	NATION	EGYPT
FRACTION	0.0000010000	
Q12	SHIPMODE1	MAIL
SHIPMODE2	SHIP	
DATE	1997-01-01	
Q13	WORD1	express
WORD2	deposits	
Q14	DATE	1997-02-01
Q15	DATE	1993-09-01
Q16	BRAND	Brand#52
TYPE	LARGE PLATED	
SIZE1	49	

SIZE2	2	
SIZE3	32	
SIZE4	23	
SIZE5	12	
SIZE6	26	
SIZE7	50	
SIZE8	31	
Q17	BRAND	Brand#23
CONTAINER	JUMBO DRUM	
Q18	QUANTITY	314
Q19	BRAND1	Brand#43
BRAND2	Brand#23	
BRAND3	Brand#33	
QUANTITY1	2	
QUANTITY2	14	
QUANTITY3	28	
Q20	COLOUR	midnight
DATE	1994-01-01	
NATION	IRAQ	
Q21	NATION	FRANCE
Q22	11	34
I2	23	
I3	22	
I4	14	
I5	19	
I6	29	
I7	28	

"Throughput stream 3 = 625195616"
-- TPC TPC-H Parameter Substitution (Version 1.3.0)
-- using 625195616 as a seed to the RNG

Q1	DELTA	89
Q2	SIZE	44
TYPE	STEEL	
REGION	AFRICA	
Q3	SEGMENT	HOUSEHOLD
DATE	1995-03-06	
Q4	DATE	1993-12-01
Q5	REGION	AMERICA
DATE	1997-01-01	
Q6	DATE	1997-01-01
DISCOUNT	0.08	
QUANTITY	25	
Q7	NATION1	VIETNAM
NATION2	RUSSIA	
Q8	NATION	RUSSIA
REGION	EUROPE	
TYPE	PROMO ANODIZED BRASS	
Q9	COLOR	sky
Q10	DATE	1994-03-01
Q11	NATION	PERU
FRACTION	0.0000010000	
Q12	SHIPMODE1	TRUCK
SHIPMODE2	SHIP	
DATE	1997-01-01	
Q13	WORD1	express
WORD2	deposits	
Q14	DATE	1997-05-01
Q15	DATE	1996-04-01
Q16	BRAND	Brand#42
TYPE	PROMO POLISHED	
SIZE1	44	
SIZE2	39	
SIZE3	12	
SIZE4	46	
SIZE5	24	
SIZE6	43	
SIZE7	3	
SIZE8	6	

Q17	BRAND	Brand#25
CONTAINER	WRAP BAG	
Q18	QUANTITY	315
Q19	BRAND1	Brand#55
BRAND2	Brand#51	
BRAND3	Brand#32	
QUANTITY1	7	
QUANTITY2	15	
QUANTITY3	24	
Q20	COLOUR	wheat
DATE	1997-01-01	
NATION	ARGENTINA	
Q21	NATION	UNITED KINGDOM
Q22	11	11
I2	20	
I3	18	
I4	24	
I5	14	
I6	10	
I7	26	

"Throughput stream 4 = 625195617"
-- TPC TPC-H Parameter Substitution (Version 1.3.0)
-- using 625195617 as a seed to the RNG

Q1	DELTA	97
Q2	SIZE	31
TYPE	BRASS	
REGION	EUROPE	
Q3	SEGMENT	BUILDING
DATE	1995-03-23	
Q4	DATE	1996-07-01
Q5	REGION	ASIA
DATE	1997-01-01	
Q6	DATE	1997-01-01
DISCOUNT	0.06	
QUANTITY	25	
Q7	NATION1	KENYA
NATION2	JORDAN	
Q8	NATION	KENYA
REGION	AFRICA	
TYPE	ECONOMY POLISHED BRASS	
Q9	COLOR	royal
Q10	DATE	1994-12-01
Q11	NATION	ETHIOPIA
FRACTION	0.0000010000	
Q12	SHIPMODE1	AIR
SHIPMODE2	SHIP	
DATE	1997-01-01	
Q13	WORD1	express
WORD2	deposits	
Q14	DATE	1997-08-01
Q15	DATE	1994-04-01
Q16	BRAND	Brand#22
TYPE	MEDIUM ANODIZED	
SIZE1	47	
SIZE2	46	
SIZE3	33	
SIZE4	25	
SIZE5	18	
SIZE6	6	
SIZE7	41	
SIZE8	19	
Q17	BRAND	Brand#22
CONTAINER	WRAP PKG	
Q18	QUANTITY	313
Q19	BRAND1	Brand#52
BRAND2	Brand#44	
BRAND3	Brand#31	
QUANTITY1	3	

QUANTITY2	16	
QUANTITY3	21	
Q20	COLOUR	honeydew
DATE		1996-01-01
NATION		ARGENTINA
Q21	NATION	MOZAMBIQUE
Q22	I1	25
I2		31
I3		13
I4		38
I5		10
I6		14
I7		24

"Throughput stream 5 = 625195618"

-- TPC TPC-H Parameter Substitution (Version 1.3.0)

-- using 625195617 as a seed to the RNG

Q1	DELTA	105
Q2	SIZE	19
TYPE		NICKEL
REGION		AMERICA
Q3	SEGMENT	HOUSEHOLD
DATE		1995-03-08
Q4	DATE	1994-04-01
Q5	REGION	MIDDLE EAST
DATE		1997-01-01
Q6	DATE	1997-01-01
DISCOUNT		0.03
QUANTITY		24
Q7	NATION1	KENYA
NATION2		FRANCE
Q8	NATION	FRANCE
REGION		EUROPE
TYPE		ECONOMY BURNISHED BRASS
Q9	COLOR	powder
Q10	DATE	1993-10-01
Q11	NATION	CHINA
FRACTION		0.0000010000

Q12	SHIPMODE1	REG AIR
SHIPMODE2		SHIP
DATE		1997-01-01
Q13	WORD1	special
WORD2		deposits
Q14	DATE	1997-11-01
Q15	DATE	1996-08-01
Q16	BRAND	Brand#52
TYPE		ECONOMY BURNISHED
SIZE1		34
SIZE2		21
SIZE3		6
SIZE4		16
SIZE5		3
SIZE6		17
SIZE7		20
SIZE8		36
Q17	BRAND	Brand#24
CONTAINER		WRAP DRUM
Q18	QUANTITY	314
Q19	BRAND1	Brand#55
BRAND2		Brand#22
BRAND3		Brand#21
QUANTITY1		8
QUANTITY2		17
QUANTITY3		28
Q20	COLOUR	salmon
DATE		1994-01-01
NATION		ETHIOPIA
Q21	NATION	INDIA
Q22	I1	26
I2		12
I3		18
I4		28
I5		11
I6		25
I7		34

Appendix D: Driver Source Code

doufload_v8.bat

```
REM Takes UFtype and update_pair as parameters.
set RAHSLEEPTIME=999999
perl %1 \load_UF%2_data_v8 %3
```

load_UF1_data_v8

```
: # -*-Perl*-
eval 'exec perl5 -S $0 ${1+"$@"}' # Horrible kludge to
convert this
    if 0;                # into a "portable" perl script

# usage perl loadUFD [update pair number]

push(@INC, split(':', $ENV{'PATH'}));

# Get TPC-D specific environment variables
require 'getvars';

# Use the macros in here so that they can handle the platform
differences.
# macro.pl should be sourced from cmvc, other people wrote
and maintain it.
require "macro.pl";

# $print_system_call = 1;

# Make output unbuffered.
select(STDOUT);
$| = 1;

if (length($ENV{"TPCD_AUDIT_DIR"}) <= 0)
{
    die "TPCD_AUDIT_DIR environment variable not set\n";
}
if (length($ENV{"TPCD_DBNAME"}) <= 0)
{
    die "TPCD_DBNAME environment variable not set\n";
}
if (length($ENV{"TPCD_SF"}) <= 0)
{
    die "TPCD_SF environment variable not set\n";
}
if (length($ENV{"TPCD_PLATFORM"}) <= 0)
{
    die "TPCD_PLATFORM environment variable not set\n";
}
if (length($ENV{"TPCD_PATH_DELIM"}) <= 0)
{
    die "TPCD_PATH_DELIM environment variable not
set\n";
}
if (length($ENV{"TPCD_PRODUCT"}) <= 0)
{
    die "TPCD_PRODUCT environment variable not set\n";
}
if (length($ENV{"TPCD_AUDIT"}) <= 0)
{
    die "Must set TPCD_AUDIT env't var. Real audit timing
sequence run if yes\n";
}
if (length($ENV{"TPCD_PHYS_NODE"}) <= 0)
{
```

```
    die "TPCD_PHYS_NODE env't var not set\n";
}

#set up local variables
$auditDir=$ENV{"TPCD_AUDIT_DIR"};
$dbname=$ENV{"TPCD_DBNAME"};
$sf=$ENV{"TPCD_SF"};
$platform=$ENV{"TPCD_PLATFORM"};
$delim=$ENV{"TPCD_PATH_DELIM"};
$gatherstats=$ENV{"TPCD_GATHER_STATS"};
$product=$ENV{"TPCD_PRODUCT"};
$RealAudit=$ENV{"TPCD_AUDIT"};
$inlistmax=$ENV{"TPCD_INLISTMAX"};
$pn=$ENV{"TPCD_PHYS_NODE"};
$flatfilepath=$ENV{"TPCD_FLATFILES"};
$tmpPath=$ENV{"TPCD_TEMP"};
$coldel="|";
$dblquote="";

$PairNum=$ARGV[0];
#DJD $current_node=$ARGV[1];
#DJD print("current_node=$current_node\n");
#DJD for ($i=0, $nodestr="000"; $i<$current_node;
$i++, $nodestr++) {}

print "Beginning ....Preload of Update Function Data.
Lineitem\n";
system_call("db2 connect to tpcd");
$str="db2 \" load from ";
$str="$str$flatfilepath${delim}lineitem.tbl.new.u" ;
$str="$str$PairNum";
$str="$str of del modified by coldel| fastparse messages
$tmpPath${delim}line.msg.u";
$str="$str$PairNum replace into
TPCDTEMP.LINEITEM_NEW statistics no nonrecoverable
CPU_PARALLELISM 8";
$str="$str partitioned db config mode load_only
partitioning_dbpartnums (0,1,2,3)";
$str="$str part_file_location $flatfilepath \" \" ";

print "$str\n";
$ret=system_call($str);
system_call("db2 commit");
if ($ret == 0)
{
    print "Preload Lineitem updates completed
successfully.\n";
}
else
{
    print "Preload Lineitem updates failed. ret=$ret\n";
    exit -1;
}

print "Beginning ....Preload of Update Function Data. Orders
\n";
#system_call("db2 connect to tpcd");
$str="db2 \" load from ";
$str="$str$flatfilepath${delim}order.tbl.new.u";
$str="$str$PairNum";
$str="$str of del modified by coldel| fastparse messages
$tmpPath${delim}order.msg.u";
$str="$str$PairNum replace into
TPCDTEMP.ORDERS_NEW statistics no nonrecoverable
CPU_PARALLELISM 8";
```

```

$str="$str partitioned db config mode load_only
output_dbpartnums (0,1,2,3)";
$str="$str part_file_location $flatfilepath \" \" ";

print "$str\n";
$ret=system_call($str);
system_call("db2 commit");
if ($ret == 0)
{
    print "Preload Orders updates completed successfully.\n";
}
else
{
    print "Preload Orders updates failed. ret=$ret\n";
    exit -1;
}

```

load_UF2_data_v8

```

: # -*-Perl*-
eval `exec perl5 -S $0 ${1+"$@"}` # Horrible kludge to
convert this
    if 0;                # into a "portable" perl script

# usage perl loadUFD [update pair number] [nodenumber]

push(@INC, split(':', $ENV{'PATH'}));

# Get TPC-D specific environment variables
require 'getvars';

# Use the macros in here so that they can handle the platform
differences.
# macro.pl should be sourced from cmvc, other people wrote
and maintain it.
require "macro.pl";

# $print_system_call = 1;

# Make output unbuffered.
select(STDOUT);
$| = 1 ;

if (length($ENV{"TPCD_AUDIT_DIR"}) <= 0)
{
    die "TPCD_AUDIT_DIR environment variable not set\n";
}
if (length($ENV{"TPCD_DBNAME"}) <= 0)
{
    die "TPCD_DBNAME environment variable not set\n";
}
if (length($ENV{"TPCD_SF"}) <= 0)
{
    die "TPCD_SF environment variable not set\n";
}
if (length($ENV{"TPCD_PLATFORM"}) <= 0)
{
    die "TPCD_PLATFORM environment variable not set\n";
}
if (length($ENV{"TPCD_PATH_DELIM"}) <= 0)
{
    die "TPCD_PATH_DELIM environment variable not
set\n";
}
if (length($ENV{"TPCD_PRODUCT"}) <= 0)
{
    die "TPCD_PRODUCT environment variable not set\n";
}

```

```

}
if (length($ENV{"TPCD_AUDIT"}) <= 0)
{
    die "Must set TPCD_AUDIT env't var. Real audit timing
sequence run if yes\n";
}
if (length($ENV{"TPCD_PHYS_NODE"}) <= 0)
{
    die "TPCD_PHYS_NODE env't var not set\n";
}

```

```

#set up local variables
$auditDir=$ENV{"TPCD_AUDIT_DIR"};
$dbname=$ENV{"TPCD_DBNAME"};
$sf=$ENV{"TPCD_SF"};
$platform=$ENV{"TPCD_PLATFORM"};
$delim=$ENV{"TPCD_PATH_DELIM"};
$gatherstats=$ENV{"TPCD_GATHER_STATS"};
$product=$ENV{"TPCD_PRODUCT"};
$RealAudit=$ENV{"TPCD_AUDIT"};
$inlistmax=$ENV{"TPCD_INLISTMAX"};
$pn=$ENV{"TPCD_PHYS_NODE"};
$flatfilepath=$ENV{"TPCD_FLATFILES"};
$tmpPath=$ENV{"TPCD_TEMP"};
$coldel="|";
$dblquote="";

```

```

$PairNum=$ARGV[0];
#DJD $current_node=$ARGV[1];
#DJD print("current_node=$current_node\n");
#DJD for ($i=0, $nodestr="000"; $i<$current_node;
$i++, $nodestr++) {}

```

```

print "Beginning ....Preload of Update Function Data. Deletes
\n";
system_call("db2 connect to tpcd");
$str="db2 \" load from \"";
$str="$str$flatfilepath$delim}delete.new.\" ";
$str="$str$PairNum";
$str="$str of del modified by coldel| fastparse messages
$tmpPath$delim}del.msg.u";
$str="$str$PairNum replace into
TPCDTEMP.ORDERS_DEL statistics no nonrecoverable
CPU_PARALLELISM 8";
$str="$str partitioned db config mode load_only
output_dbpartnums (0,1,2,3)";
$str="$str part_file_location $flatfilepath \" \" ";

```

```

print "$str\n";
$ret=system_call($str);
system_call("db2 commit");
if ($ret == 0)
{
    print "Preload Deletes updates completed successfully.\n";
}
else
{
    print "Preload Deletes updates failed. ret=$ret\n";
    exit -1;
}

```

LoadSampleUFData

```

#!/usr/bin/perl
# usage LoadSampleUFData

```

```

($myName = $0) =~ s@.*/@@; $usage="

```



```

Usage: loaddata [nodenumber] [source dir]
       nodenumber = local node number
       source dir = source dir to load data from\n";

die $usage if (@ARGV > 2);

push(@INC, split(':', $ENV{'PATH'}));

# Get TPC-D specific environment variables
require 'getvars';

# Use the macros in here so that they can handle the platform
differences.
# macro.pl should be sourced from cmvc, other people wrote
and maintain it.
require "macro.pl";

if (length($ENV{"TPCD_DDLPATH"}) <= 0)
{
    die "TPCD_DDLPATH not set\n";
}
$dddlpath=$ENV{"TPCD_DDLPATH"};

# Make output unbuffered. I'm not sure why we would want
to do this but many
# of the fvt testcases do it.
select(STDOUT);
$| = 1 ;

open(OUTFILE, ">temp_UF_load.bat");
print OUTFILE "set RAHSLEEPTIME=999999\n";
print OUTFILE "db2 connect to tpcdn";
print OUTFILE "perl $ddlpath\\load_UF1_data_v8 32\n";
print OUTFILE "perl $ddlpath\\load_UF2_data_v8 32\n";
print OUTFILE "call $ddlpath\\runstats_uf\n";
close(OUTFILE);
system("temp_UF_load.bat");
1;

```

runpower

```

: # -*-Perl*-
eval 'exec perl5 -S $0 ${1+"$@"}' # Horrible kludge to
convert this
    if 0;                # into a "portable" perl script

# usage runpower [UF] [-emon <counter file>]
# where UF is the optional parameter that says to run the
power test
# with the update functions. By default, the update functions
are not
# run

push(@INC, split(':', $ENV{'PATH'}));

# Get TPC-D specific environment variables
require 'getvars';

# Use the macros in here so that they can handle the platform
differences.
# macro.pl should be sourced from cmvc, other people wrote
and maintain it.
require "macro.pl";
require "tpcdmacro.pl";

# Make output unbuffered.
select(STDOUT);

```

```

$| = 1 ;

# $print_system_call = 1;

if (@ARGV > 0)
{
    $runUF=$ARGV[0];
}
else
{
    $runUF="no";
}

$monitor="no";
if (@ARGV > 1)
{
    $monitor=$ARGV[1];
}
$debug = 1;
$emon = 0;
$emonInput = "";
if (@ARGV > 2)
{
    if ($ARGV[1] ne "-emon")
    {
        die "Usage: perl runpower [UF] [-
emon <counter file>]\n";
    }
    $emon = 1;
    $emonInput = $ARGV[2];
}

if (length($ENV{"TPCD_AUDIT_DIR"}) <= 0)
{
    die "TPCD_AUDIT_DIR environment variable not set\n";
}
if (length($ENV{"TPCD_RUN_DIR"}) <= 0)
{
    die "TPCD_RUN_DIR environment variable not set\n";
}
if (length($ENV{"TPCD_DBNAME"}) <= 0)
{
    die "TPCD_DBNAME environment variable not set\n";
}
if (length($ENV{"TPCD_RUNNUMBER"}) <= 0)
{
    die "TPCD_RUNNUMBER environment variable not
set\n";
}
if (length($ENV{"TPCD_SF"}) <= 0)
{
    die "TPCD_SF environment variable not set\n";
}
if (length($ENV{"TPCD_PLATFORM"}) <= 0)
{
    die "TPCD_PLATFORM environment variable not set\n";
}
if (length($ENV{"TPCD_PATH_DELIM"}) <= 0)
{
    die "TPCD_PATH_DELIM environment variable not
set\n";
}
if (length($ENV{"TPCD_PRODUCT"}) <= 0)
{
    die "TPCD_PRODUCT environment variable not set\n";
}
if (length($ENV{"TPCD_AUDIT"}) <= 0)
{
    die "Must set TPCD_AUDIT env't var. Real audit timing
sequence run if yes\n";
}

```

```

}
if (length($ENV{"TPCD_PHYS_NODE"}) <= 0)
{
    die "TPCD_PHYS_NODE env't var not set \n";
}
if (length($ENV{"TPCD_LOG_DIR"}) <= 0)
{
    $ENV{"TPCD_LOG_DIR"} = "NULL";
}
if (length($ENV{"TPCD_MODE"}) <= 0)
{
    die "TPCD_MODE environment variable not set-
    uni/smp/mln \n";
}
if (length($ENV{"TPCD_ROOTPRIV"}) <= 0)
{
    die "TPCD_ROOTPRIV environment variable not set-
    yes/no \n";
}

#set up local variables
$runNum=$ENV{"TPCD_RUNNUMBER"};
$runDir=$ENV{"TPCD_RUN_DIR"};
$auditDir=$ENV{"TPCD_AUDIT_DIR"};
$dbname=$ENV{"TPCD_DBNAME"};
$sf=$ENV{"TPCD_SF"};
$platform=$ENV{"TPCD_PLATFORM"};
$delim=$ENV{"TPCD_PATH_DELIM"};
$gatherstats=$ENV{"TPCD_GATHER_STATS"};
$product=$ENV{"TPCD_PRODUCT"};
$RealAudit=$ENV{"TPCD_AUDIT"};
$inlistmax=$ENV{"TPCD_INLISTMAX"};
$pn=$ENV{"TPCD_PHYS_NODE"};
$logDir=$ENV{"TPCD_LOG_DIR"};
$rootPriv=$ENV{"TPCD_ROOTPRIV"};
$mode=$ENV{"TPCD_MODE"};
if (( $mode eq "uni" ) || ( $mode eq "smp" ))
{
    $all_ln="once";
    $all_pn="once";
    $once="once";
}
else
{
    $all_ln="all_ln";
    $all_pn="all_pn";
    $once="once";
}

if ($inlistmax eq "default")
{
    $inlistmax = 400;
}

# the auditruns directory is where we have already generate
the sql files for the
# updates and the power tests

# append isolation level information about tpcdbatch to the
miso file
# the miso file is created here but appended to for power and
throughput
# information

$misofile="$runDir${delim}miso$runNum";
if ( -e $misofile )
{
    &rm("$misofile");
}

```

```

# if we are in real audit mode then we must start the db
manager now since
# there must be no activity on the database between the time
the build script
# has finished and the time the power test is started
if ( $RealAudit eq "yes" )
{
    system_call("db2start");
}

# do not activate the database
#if ( $RealAudit ne "yes" )
#{
#    system_call("db2 activate database $dbname");
#}

# Report current log info to the run# directory in a file called
startLog.Info

# DJD system_call("perl getLogInfo.pl startLog");

system("getLog.bat startlog");

open(MISO, ">$misofile") || die "Can't open $misofile: $!\n";
$curTs = `perl gettimestamp "long"`;
print MISO "Timestamp and isolation level of tpcdbatch
before power run at : $curTs\n";
close(MISO);
if ( $product eq "pe" )
{
    system_call("db2 \\'connect to $dbname\'; db2 \\'select
name,creator,valid,unique_id,isolation from sysibm.sysplan
where name like "TPCD%\\'; db2 connect reset; db2
terminate >> $runDir${delim}miso$runNum \');
}
else
{
    &verifyTPCDBatch("$misofile","$dbname");
}

if ($platform eq "aix")
{
    # Create the sysunused file. This reports what disks are
    attached, and which
    # ones are being used. Its use spans both the runpower and
    runthroughput tests
    system_call("echo \\'The following disks are assigned to the
    indicated volume groups\' > $runDir/sysunused$runNum")
    && die "cannot create $runDir/sysunused$runNum";

    system_call("lspv >> $runDir/sysunused$runNum");
    system_call("echo \\'The following volume groups are
    currently online\' >> $runDir/sysunused$runNum");
    $curTs = `perl gettim estamp "long"`;
    system_call("echo \\'$curTs\' >>
    $runDir/sysunused$runNum");
    system_call("lsvg -o >> $runDir/sysunused$runNum");
    # show the disks that are used/unused
    system_call("getdisks \\'Before the start of the Power
    Test \\'");
}
else
{
    # for all other platforms
    system_call("echo Assume that all portions of the system
    are used >> $runDir${delim}sysunused$runNum");
}

```

```

&getConfig("p");
if ( $rootPriv eq "yes" )
{
    # get the o/s tuning parameters...currently AIX only and
    only if your
    # user has root privileges to run this
    &getOSTune("p");
}

if ($gatherstats eq "on")
{
    # gather vm io and net stats
    if ($platform eq "aix" || $platform eq "sun" || $platform eq
    "ptx")
    {
        # gather vmstats and iostats (and net stats if in mpp
        mode)
        system_call("perl getstats p &");
    }
    else
    {
        # added to activate monitoring
        print "Stats gather not set up for current platform
        $platform\n";
    }
}

# print to screen what type of run is running and set variables
to run
# the query and update streams in parallel
if ($runUF ne "UF")
{
    $semcontrol = "off";
    print "Beginning power stream....no update functions\n";

    $streamEx = "";
    $streamExNT = "";
}
else
{
    $semcontrol = "on";
    print "Beginning power stream....with update functions\n";
    if ( $platform eq "nt" )
    {
        $streamExNT = "start /b";
        $streamEx = "";
    }
    else
    {
        $streamExNT = "";
        $streamEx = "&";
    }
}

if ($emon)
{
    system_call("start /b emon -i $emonInput");
    sleep(5);
}

if ( $monitor eq "yes" )
{
    system_call("db2 update monitor switches using
    bufferpool on sort on statement on");
}

system_call("db2 connect to $dbname");

# bbe This new line (below) runs queries for power test

```

```

#printf("$streamExNT
$auditDir${delim}auditruns${delim}tpcdbatch -d $dbname -
f $runDir${delim}qtextpow.sql -r on -b on -s $sf -u p1 -m
$inlistmax -n 0 -l
$auditDir${delim}auditruns${delim}querytext${delim}strea
mpow.list -p $semcontrol $streamEx\n");
$ret=system_call("$streamExNT
$auditDir${delim}auditruns${delim}tpcdbatch -d $dbname -
f $runDir${delim}qtextpow.sql -r on -b on -s $sf -u p1 -m
$inlistmax -n 0 -l
$auditDir${delim}auditruns${delim}querytext${delim}strea
mpow.list -p $semcontrol $streamEx");

if ( $monitor eq "yes" )
{
    $curTs = `perl gettimestamp "short"`;
    # grab the db and dbm snapshot before we deactivate
    system_call("db2 get snapshot for all on $dbname >
    $runDir${delim}power$runNum.snap.$curTs");
    system_call("db2 get snapshot for database manager >>
    $runDir${delim}power$runNum.snap.$curTs");
}

if ( $runUF eq "UF" )
{
    $ret2 =
    system_call("$auditDir${delim}auditruns${delim}tpcdbatch
    -d $dbname -f $runDir${delim}qtextqf.sql -r on -b on -s $sf
    -u p2 -m $inlistmax -n 0 -l
    $auditDir${delim}auditruns${delim}querytext${delim}strea
    mpuf.list");
}
else
{
    $ret2 = 0; # If UFs were not running, then the stream
    cannot fail
}

if (($ret2 == 0) && ($ret == 0))
{
    print "Power stream completed succesfully.\n";
}
else
{
    print "Power stream failed. ret=$ret \n";
}

if ($platform eq "aix")
{
    # show that the same disks are still used or unused
    system_call("getdisks \"After completion of the Power
    Test\"");

    #clean up
}

if ($gatherstats eq "on")
{
    # gather vm io and net stats
    if ($platform eq "aix" || $platform eq "sun" || $platform eq
    "ptx")
    {
        # kill the stats that were being gathered
        if ($platform eq "ptx")
        {
            $src= `perl5 zap "-f" "sar"`;
            $src= `perl5 zap "-f" "sadc"`;
        }
        else
        {
            $src= `perl5 zap "-f" "vmstat"`;
        }
    }
}

```

```

        $src= `perl5 zap "-f" "iostat";
    }
    if ( $pn > 1 )
    {
        $src= `perl5 zap "-f" "netstat";
    }
    $src= `perl5 zap "-f" "getstats";
}

# if ( $RealAudit ne "yes" )
#{
#   $curTs = `perl gettimestamp "short";
#   # grab the db and dbm snapshot before we deactivate
#   system_call("db2 get snapshot for all on $dbname >
$runDir${delim}dbrun$runNum.snap.$curTs");
#   system_call("db2 get snapshot for database manager >>
$runDir${delim}dbrun$runNum.snap.$curTs");
#}

# TS: Moved from above the previous "if" statement to after.
open(MISO, ">>$misofile") || die "Can't open $misofile:
$!\n";
$curTs = `perl gettimestamp "long";
print MISO "Timestamp and isolation level of tpcdbatch after
power run at : $curTs\n";
close(MISO);

if ( $product eq "pe" )
{
    system_call("db2 \\'connect to $dbname\\'; db2 \\'select
name,creator,valid,unique_id,isolation from sysibm.sysplan
where name like \"TPCD%\"\\';db2 connect reset;db2 terminate
>> $runDir${delim}miso$runNum");
}
else
{
    &verifyTPCDBatch("$misofile","$dbname");
}

#####

# now copy the reports from the count of streams files into
one final file
&cat("$runDir${delim}pstrcnt*","$runDir${delim}mpstrcnt
$runNum");
#(NOTE: there is a dependancy that this mpstrcnt file exist
before the
# calcmetrics.pl script is called, both because it is used as
input for
# calcmetrics.pl, and because the output from calcmetrics is
used as
# the trigger for watchstreams to complete, and watchstreams
cats its
# output at the end of the mstrcnt file.

# generate the mpinter?.metrics file in the run directory
#require 'calcmetrics.pl';
if ( $runUF eq "UF" )
{
    system_call("perl calcmetrics.pl UF");
}
else
{
    system_call("perl calcmetrics.pl");
}

# concatenate all the throughput inter files that were used to
# generate these results into the calcmetrics output file
(mpinterX.metrics)

```

```

#cd $TPCD_RUN_DIR
&cat("$runDir${delim}mpqinter*","$runDir${delim}mpinte
r$runNum.metrics");

if ( $runUF eq "UF" ) {

    &cat("$runDir${delim}mpufinter*","$runDir${delim}mpint
er$runNum.metrics");
}

# if ( $runUF eq "no" ) {
#   &rm("$runDir${delim}mpuf*");
#}

#####

# no longer activate/deactivate the database
# if ( $RealAudit ne "yes" )
#{
#   # deactivate the database
#   system_call("db2 deactivate database $dbname");
#}

# do not stop the database after the power test
# if ( $RealAudit ne "yes" )
#{
#   system_call("db2stop");
#}

1;

sub getConfig
{
    $testtype=$_[0];
    print "Getting database configuration.\n";

    $dbtunefile="$runDir${delim}m${testtype}dbtune${runNu
m}";
    open(DBTUNE, ">>$dbtunefile") || die "Can't open
$dbtunefile: $!\n";
    $timestamp=`perl gettimestamp "long";
    print DBTUNE "Database and Database manager
configuration taken at : $timestamp";
    close(DBTUNE);
    system_call("db2start >> $dbtunefile");
    system_call("db2level >> $dbtunefile");
    system_call("db2 get database configuration for $dbname
>> $dbtunefile");
    system_call("db2 get database manager configuration >>
$dbtunefile");
    system_call("db2set >> $dbtunefile");
    if (( $mode eq "mln" ) || ( $mode eq "mpp" ))
    {
        $cfgfile="$runDir${delim}dbtune${runNum}.mln";
        system_call("db2_all db2 get db cfg for $dbname >
$cfgfile");
        #   system_call("db2_all db2 terminate");
        system_call("db2 get dbm cfg >> $cfgfile");
        system_call("db2set >> $cfgfile");
        #   printf("db2_all \"\\\" typeset -i ln=##; db2 get db cfg for
$dbname > $cfgfile${ln} ; db2 get dbm cfg >>
$cfgfile${ln} ; db2set >> $cfgfile${ln} ; db2 terminate \"");
        #   system_call("db2_all \"\\\" typeset -i ln=##; db2 get db cfg
for $dbname > $cfgfile${ln} ; db2 get dbm cfg >>
$cfgfile${ln} ; db2set >> $cfgfile${ln} ; db2 terminate \"");
    }
}

sub getOSTune
{

```

```

$testtype=$_[0];
if ( $platform eq "aix" )
{
    print "Getting OS and VMdatabase configuration.\n";

    $ostunefile="$runDir${delim}m${testtype}ostune${runNum}";
    open(OSTUNE, ">$ostunefile") || die "Can't open $ostunefile: $!\n";
    $timestamp=`perl gettimestamp "long"`;
    print OSTUNE "Operating System and Virtual Memory configuration taken at : $timestamp";
    close(OSTUNE);

    system_call("${delim}usr${delim}samples${delim}kernel${delim}schedtune >> $ostunefile");

    system_call("${delim}usr${delim}samples${delim}kernel${delim}vmtune >> $ostunefile");
    }
    else
    {
        print "OS parameters retrieval not supported for $platform \n";
    }
}

sub verifyTPCDBatch
{
    $logfile=$_[0];
    $dbname=$_[1];
    $file="verifytpcdbatch.clp";
    open(VERTBL, ">$file") || die "Can't open $file: $!\n";
    print VERTBL "connect to $dbname;\n";
    print VERTBL "select
name,creator,valid,last_bind_time,isolation from
sysibm.sysplan where name like 'TPCD%';\n";
    print VERTBL "connect reset;\n";
    print VERTBL "terminate;\n";
    close(VERTBL);
    system_call("db2 -vtf $file >> $logfile");
}

```

runthroughput

```

: # -*-Perl*-
eval `exec perl5 -S $0 ${1+"$@"}` # Horrible kludge to
convert this
    if 0;          # into a "portable" perl script

# usage runthroughput [UF]
# where UF is the optional parameter that says to run the
throughput test
# with the update functions. By default, the update functions
are not
# run
# If UF is not supplied and a number is supplied, then that
number is taken
# as the number of concurrent throughput streams to run.
This is also optional

push(@INC, split(':', $ENV{'PATH'}));

# Get TPC-D specific environment variables
require 'getvars';

# Use the macros in here so that they can handle the platform
differences.

```

```

# macro.pl should be sourced from cmvc, other people wrote
and maintain it.
require "macro.pl";
require "tpcdmacro.pl";

```

```

# $print_system_call = 1;

$runUF="no";
if (@ARGV > 0)
{
    if ($ARGV[0] eq "UF")
    {
        $runUF=$ARGV[0];
    }
}

if (length($ENV{"TPCD_AUDIT_DIR"}) <= 0)
{
    die "TPCD_AUDIT_DIR environment variable not set \n";
}
if (length($ENV{"TPCD_RUN_DIR"}) <= 0)
{
    die "TPCD_RUN_DIR environment variable not set \n";
}
if (length($ENV{"TPCD_DBNAME"}) <= 0)
{
    die "TPCD_DBNAME environment variable not set \n";
}
if (length($ENV{"TPCD_RUNNUMBER"}) <= 0)
{
    die "TPCD_RUNNUMBER environment variable not set \n";
}
if (length($ENV{"TPCD_NUMSTREAM"}) <= 0)
{
    die "TPCD_NUMSTREAM environment variable not set \n";
}
if
(length($ENV{"TPCD_RUN_ON_MULTIPLE_NODES"})
<= 0)
{
    die "TPCD_RUN_ON_MULTIPLE_NODES environment
variable not set \n";
}
if (length($ENV{"TPCD_SF"}) <= 0)
{
    die "TPCD_SF environment variable not set \n";
}
if (length($ENV{"TPCD_PRODUCT"}) <= 0)
{
    die "TPCD_PRODUCT environment variable not set \n";
}
if (length($ENV{"TPCD_PLATFORM"}) <= 0)
{
    die "TPCD_PLATFORM environment variable not set \n";
}
if (length($ENV{"TPCD_AUDIT"}) <= 0)
{
    die "Must set TPCD_AUDIT env't var. Real audit timing
sequence run if yes\n";
}
if (length($ENV{"TPCD_LOG_DIR"}) <= 0)
{
    $ENV{"TPCD_LOG_DIR"} = "NULL";
}
if (length($ENV{"TPCD_MODE"}) <= 0)
{
    die "TPCD_MODE environment variable not set-
uni/smp/mln \n";
}

```

```

}
if (length($ENV{"TPCD_ROOTPRIV"}) <= 0)
{
    die "TPCD_ROOTPRIV environment variable not set-
yes/no \n";
}

#set up local variables
$runNum=$ENV{"TPCD_RUNNUMBER"};
$numStream=$ENV{"TPCD_NUMSTREAM"};
$runDir=$ENV{"TPCD_RUN_DIR"};
$auditDir=$ENV{"TPCD_AUDIT_DIR"};
$dbname=$ENV{"TPCD_DBNAME"};
$sf=$ENV{"TPCD_SF"};
$product=$ENV{"TPCD_PRODUCT"};
$multinode=$ENV{"TPCD_RUN_ON_MULTIPLE_NODE
S"};
$platform=$ENV{"TPCD_PLATFORM"};
$delim=$ENV{"TPCD_PATH_DELIM"};
$RealAudit=$ENV{"TPCD_AUDIT"};
$inlistmax=$ENV{"TPCD_INLISTMAX"};
$gatherstats=$ENV{"TPCD_GATHER_STATS"};
$logDir=$ENV{"TPCD_LOG_DIR"};
$rootPriv=$ENV{"TPCD_ROOTPRIV"};
$mode=$ENV{"TPCD_MODE"};

$path="$auditDir${delim}auditruns";

if (( $mode eq "uni" ) || ( $mode eq "smp" ))
{
    $all_ln="once";
    $all_pn="once";
    $once="once";
}
else
{
    $all_ln="all_ln";
    $all_pn="all_pn";
    $once="once";
}

# return 1 if the given pattern(parameter $_[0]) matches any
file
sub existfile {
    if ($platform eq "aix" || $platform eq "sun" || $platform eq
"ptx")
    {
        `ls $_[0] 2> /dev/null | wc -l` + 0 != 0;
    }
    else
    {
        `dir /b $_[0] 2> NUL | wc -l` + 0 != 0;
    }
}

if ($inlist max eq "default")
{
    $inlistmax = 400;
}

# no longer stop and start the dbm between runs when not in
realaudit mode
#if ( $RealAudit ne "yes" )
#{
# # if we are not in real audit mode then we must start the
db manager now
# system_call("db2start");
# # activate the database
# system_call("db2 activate database $dbname");
#}

```

```

$misofile="$runDir${delim}miso$runNum";
# append isolation level information about tpcdbatch to the
miso file
open(MISO, ">>$misofile") || die "Can't open $misofile:
$!\n";
$curTs = `perl gettimestamp "long"`;
print MISO "Timestamp and isolation level of tpcdbatch
before throughput run at : $curTs\n";
close(MISO);

if ( $product eq "pe" )
{
    system_call("db2 \\"connect to $dbname\\"; db2 \\"select
name,creator,valid,unique_id,isolation from sysibm.sysplan
where name like 'TPCD%'\\" >>
$runDir${delim}miso$runNum ");
}
else
{
    &verifyTPCDBatch("$misofile", "$dbname");
}

# kick off the script that will monitor for the database
applications during
# the running of the throughput tests. This will quit when the
mtinterX.metrics
# (where X=runnumber) file has been created.
# set variables to run streams in parallel
if ( $platform eq "nt" )
{
    $streamExNT = "start /b";
    $streamEx = "";
}
else
{
    $streamExNT = "";
    $streamEx = "&";
}

if ( $platform eq "aix" || $platform eq "sun" || $platform eq
"nt" || $platform eq "hp")
{
    system_call("$streamExNT perl watchstreams
$streamEx");
}
else
{
    die "platform not supported, can't start watchstreams in
background";
}

# show the disks that are used/unused
if ($platform eq "aix")
{
    system_call("getdisks \\"Before the start of the Throughput
Test\\"");
}

if ($gatherstats eq "on")
{
    # gather vm io and net stats
    if ($platform eq "aix" || $platform eq "sun" || $platform eq
"ptx" || $platform eq "hp")
    {
        # gather vmstats and iostats (and net stats if in mpp
mode)
        system_call("perl getstats t &");
    }
    else
    {

```

```

        print "Stats gather not set up for current platform
$platform\n";
    }
}

if ( $multinode ne "yes" )
{
    # we are running the query streams and update stream from
    the same node or
    # from a serial db....use semaphores for control of the
    update stream

    # the auditruns directory is where we have already
    generated the sql files
    # for the updates and the power tests

    $loopStream=1;

    for ( $loopStream = 1; $loopStream <= $numStream;
    $loopStream++)
    {
        print "starting stream $loopStream\n";
        system_call("echo Executing stream $loopStream out of
$numStream.");
        # run the queries
        if ( $platform eq "aix" || $platform eq "sun" || $platform eq
"nt" || $platform eq "ptx" ||
        $platform eq "hp" )
        {
            system_call("$streamExNT $path${delim}tpcdbatch -d
$dbname -f $runDir${delim}qtextt$loopStream.sql -r on -b on -s
$sf -u t1 -m $sinlistmax -n $loopStream -l
$path${delim}querytext${delim}stream$loopStream.list
$streamEx");
        }
        else
        {
            die "platform $platform not supported yet";
        }
    }

    # run the update function stream....this will wait until the
    queries have
    # completed to kick off the updates
    print "starting update stream\n";

    if ($runUF eq "no") {

$ret=system_call("$auditDir${delim}auditruns${delim}tpcd
batch -d $dbname -f $runDir${delim}quft.sql -r on -b on -s
$sf -u t -m $sinlistmax -n $numStream -l
$runDir${delim}streamuf.list");
    }
    else {

$ret=system_call("$auditDir${delim}auditruns${delim}tpcd
batch -d $dbname -f $runDir${delim}quft.sql -r on -b on -s
$sf -u t2 -m $sinlistmax -n $numStream -l
$runDir${delim}streamuf.list");
    }
    print "update stream done\n";

    &getConfig("t");
    if ( $rootPriv eq "yes" )
    {
        # get the o/s tuning parameters...currently AIX only and
        only if your
        # user has root privileges to run this
        &getOSTune("t");

```

```

    }
}
else
{
    # we are running the query streams and update stream from
    different nodes, use
    # files and rksh to control the update stream
    system_call("runthru.pe");
}

if ($platform eq "aix")
{
    # show the disks that are used/unused
    system_call("getdisks \"After the completion of the
Throughput Test \"");
}
if ($gatherstats eq "on")
{
    # gather vm io and net stats
    if ($platform eq "aix" || $platform eq "sun" || $platform eq
"ptx")
    {
        # kill the stats that were being gathered
        if ($platform eq "ptx")
        {
            $src= `perl5 zap "-f" "sar"`;
            $src= `perl5 zap "-f" "sadc"`;
        }
        else
        {
            $src= `perl5 zap "-f" "vmstat"`;
            $src= `perl5 zap "-f" "iostat"`;
        }
        if ( $pn > 1 )
        {
            $src= `perl5 zap "-f" "netstat"`;
        }
        $src= `perl5 zap "-f" "getstats"`;
    }
}

open(MISO, ">>$misofile") || die "Can't open $misofile:
$!\n";
$curTs = `perl gettimestamp "long"`;
print MISO "Timestamp and isolation level of tpcdbatch after
throughput run at : $curTs\n";
close(MISO);

if ( $product eq "pe" )
{
    system_call("db2 \"connect to $dbname\"; db2 \"select
name,creator,valid,unique_id,isolation from sysibm.sysplan
where name like 'TPCD%\" >>
$runDir${delim}miso$runNum \"");
}
else
{
    &verifyTPCDBatch("$misofile", "$dbname");
}

if ( $RealAudit ne "yes" )
{
    $curTs = `perl gettimestamp "short"`;
    # grab the db and dbm snapshot before we deactivate
    system_call("db2 get snapshot for all on $dbname >
$runDir${delim}dbTrun$runNum.snap.$curTs");
    system_call("db2 get snapshot for database manager >>
$runDir${delim}dbTrun$runNum.snap.$curTs");
}

```

```

# now copy the reports from the count of streams files into
one final file
&cat("$runDir${delim}strcnt*", "$runDir${delim}mstrcnt$runNum");
#(NOTE: there is a dependancy that this mstrcnt file exist
before the
# calcmetrics.pl script is called, both because it is used as
input for
# calcmetrics.pl, and because the output from calcmetrics is
used as
# the trigger for watchstreams to complete, and watchstreams
cats its
# output at the end of the mstrcnt file.

# generate the mtinter?.metrics file in the run directory
#require 'calcmetrics.pl';

if ( $runUF ne "no")
{
    system_call("perl calcmetrics.pl $numStream UF");
}
else
{
    system_call("perl calcmetrics.pl $numStream");
}

# concatenate all the throughput inter files that were used to
# generate these results into the calcmetrics output file
(mtinterX.metrics)
#cd $TPCD_RUN_DIR
&cat("$runDir${delim}mts*inter*", "$runDir${delim}mtinter
$runNum.metrics");

if ($runUF ne "no") {

&cat("$runDir${delim}mtufinter*", "$runDir${delim}mtinter
$runNum.metrics");
}

if (&existfile("$runDir${delim}mp*")) {
    # generate the mplot stuff
    system_call("perl gen_mplot"); # kmchan

    # generate the mlog information file
    require 'buildmlog';
}

# if ($runUF eq "no") {
#   &rm("$runDir${delim}mtuf*");
# }

# deactivate the database this needs to remain at the end of
run throughput so
# asynchronous writing of the log files completes.
system_call("db2 deactivate database $dbname");
$rc=&dodb_noconn("db2 get db cfg for $dbname | grep -i log
>> $runDir${delim}endLog.Info", $all_ln);
if ( $logDir ne "NULL" )
{
    $rc=&dodb_noconn("$dircmd $logDir >>
$runDir${delim}endLog.Info", $all_ln);
}

#system_call("db2_all \\\`); db2 get db cfg for tpcd | grep -i log
>> $runDir${delim}endLog.Info ; db2 terminate' ");
#system_call("ls -ltra /node??vg.log/NODE00* >>
$runDir${delim}endLog.Info");

#Create Catalog info
$rc = system_call("perl catinfo.pl p");

```

```

if ( $rc != 0 )
{
    warn "catinfo failed!!!\n";
}

# Report current log info to the run# directory in a file called
endLog.Info
# system_call("perl getLogInfo.pl endLog");

system("getLog.bat endlog");

# if we are in audit mode we must do a db2stop at the end of
the power/throughput run
if ( $RealAudit eq "yes" )
{
    system_call("db2stop");
}

1;

sub getConfig
{
    $testtype=$_[0];
    print "Getting database configuration.\n";

    $dbtunefile="$runDir${delim}m${testtype}dbtune${runNum}";
    open(DBTUNE, ">$dbtunefile") || die "Can't open
$dbtunefile: $!\n";
    $timestamp=`perl gettimestamp "long"`;
    print DBTUNE "Database and Database manager
configuration taken at : $timestamp";
    close(DBTUNE);
    system_call("db2level >> $dbtunefile");
    system_call("db2 get database configuration for $dbname
>> $dbtunefile");
    system_call("db2 get database manager configuration >>
$dbtunefile");
    system_call("db2set >> $dbtunefile");
}

sub getOSTune
{
    $testtype=$_[0];
    if ( $platform eq "aix" )
    {
        print "Getting OS and VMdatabase configuration.\n";

        $ostunefile="$runDir${delim}m${testtype}ostune${runNum}";
        open(OSTUNE, ">$ostunefile") || die "Can't open
$ostunefile: $!\n";
        $timestamp=`perl gettimestamp "long"`;
        print OSTUNE "Operating System and Virtual Memory
configuration taken at : $timestamp";
        close(OSTUNE);

        system_call("${delim}usr${delim}samples${delim}kernel${delim}schedtune >> $ostunefile");

        system_call("${delim}usr${delim}samples${delim}kernel${delim}vmtune >> $ostunefile");
    }
    else
    {
        print "OS parameters retrieval not supported for
$platform\n";
    }
}

```



```

}

sub verifyTPCDBatch
{
    $logfile=$_[0];
    $dbname=$_[1];
    $file="verifytpcdbatch.clp";
    open(VERTBL, ">$file") || die "Can't open $file: $!\n";
    print VERTBL "connect to $dbname;\n";
    print VERTBL "select
name,creator,valid,last_bind_time,isolation from
sysibm.sysplan where name like 'TPCD%'\n";
    print VERTBL "connect reset;\n";
    print VERTBL "terminate;\n";
    close(VERTBL);
    system_call("db2 -vtf $file >> $logfile");
}

tpcd_cl.bat

erase tpcdUF.c
erase tpcdUF.obj
erase tpcdbatch.c
erase tpcdbatch.obj
erase tpcdbatch.map

set db2options=+c -t +p -v
db2start
db2 connect to %1
db2 prep tpcdbatch.sqc bindfile package isolation rr blocking
all datetime iso
db2 prep tpcdUF.sqc bindfile package isolation rs blocking
all datetime iso
db2 connect reset
db2 terminate
REM make sure LIBPATH is set to include the compiler
libraries and db2 libraries
cl -c -Z7 -DSQLWINT -W3 -J tpcdbatch.C
cl -c -Z7 -DSQLWINT -W3 -J tpcdUF.C
link -debug -out:tpcdbatch.exe tpcdbatch.obj tpcdUF.obj
user32.lib kernel32.lib db2api.lib -subsystem:console

```

tpcdbatch.h

```

/*****
*****
*
*   TPCDBATCH.H
*
*   Revision History:
*
*   * 27 may 99 bbe from (24 nov 98 jen) fixNTtimestamp -
fixed NT timestamp to print millisecond correctly
*   * 27 may 99 bbe from (10 dec 98 jen) SUN - added Haider's
changes necessary for SUN
*   * 17 jun 99 jen Increased version to 5.1
*   * 10 aug 99 bbe Increased version to 5.2
*   * 13 aug 99 bbe Increased version to 5.3
*****
*****/

/** Necessary header files **/

/** System header files **/
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

```

```

#include <math.h>
#include <fcntl.h>          /* SUN bbe */

#include <time.h>
#include <ctype.h>
#if (defined(SQLAIX) || defined(SQLPTX) ||
defined(LINUX) || defined(SQLHP))
#include <unistd.h>          /* SUN */
#include <sys/stat.h>        /* SUN */
#endif
#if ((defined(SQLAIX) || defined(SQLPTX)) &&
!defined(LINUX))
#include <sys/vnode.h>       /* SUN */
#endif
#ifndef SQLWINT
#include <sys/time.h>         /*@d33143aha*/
#include <sys/ipc.h>
#include <sys/sem.h>
#if (!defined(SQLPTX) && !defined(LINUX)&&
!defined(SQLHP))
#include <sys/mode.h>
#endif
#include <sys/timeb.h>
#include <sys/types.h>
#else
#include <windows.h>
#include <sys/timeb.h>
#endif
#include <errno.h>

/** External header files **/
#include "sqlda.h"
#include "sqlenv.h"
#include "sql.h"
#include "sqlmon.h"
#include "sqlca.h"
#include "sqlutil.h"
#include "sqlcodes.h"

/** Internal header files **/
/** #ifdef __cplusplus **/
/** #include "sqlz.h" **/
/** #include "sqlzcopy.h" **/
/** #endif **/

/*****
*****
** Define synonyms here */
/*****
*****/

#define TPCDBATCH_VERSION "5.5"

#define TPCDBATCH_NONSQL    10
/* @d23684 tjj */
#define TPCDBATCH_SELECT    20
#define TPCDBATCH_NONSELECT 30
#define TPCDBATCH_EOBLOCK   40
/* @d30369 tjj */
#define TPCDBATCH_INSERT    50
#define TPCDBATCH_DELETE    60

#define TPCDBATCH_MAX_COLS  100
/* @d30369 tjj */

#define TPCDBATCH_CHAR char

#define TPCDBATCH_PRINT_FLOAT_WIDTH 20
/* kmw - allow 15 whole digit for %#.3f format */

```

```

/* - note: use > 18, size of long identifier so that it will
*/
/* be larger than any column heading */
#define TPCDBATCH_PRINT_FLOAT_MAX 1e15 /*
kmw */
/* #define TPCD_PREPARETIME 1 */ /* for separate
prep/exec on uf jen 1106 */

#ifdef SQLWINT
#define PATH_DELIM '\\'
#define sleep(a) Sleep((a)*1000)
#else
#define PATH_DELIM '/'
#endif

#define PARALLEL_UPDATES 1

#ifdef PARALLEL_UPDATES
#define UF1OUTSTREAMPATTERN
"%s%cuf1.%02d.%d.out"
#define TPCD_NONPARTITIONED
#define UF2OUTSTREAMPATTERN
"%s%cuf2.%02d.%d.out"
#else
/* kelly add same as NONPART. */
#define UF2OUTSTREAMPATTERN
"%s%cuf2.%02d.%d.out"
/* kelly ... take this out ... should be same name as for non-
partitioned
#define UF2OUTSTREAMPATTERN
"%s%cuf2.%02d.%d.%d.out" */ /*DELjen add
delchunk*/
#endif
#define BUFSIZE 1024
#endif

#define T_STAMP_FORM_1 1
#define T_STAMP_FORM_2 2
/* jen TIME_ACC start */
#define T_STAMP_FORM_3 3
#define T_STAMP_1LEN 17
#if defined (SQLUNIX) || defined (SQLAIX)
#define T_STAMP_3LEN 24
#else
#define T_STAMP_3LEN 21 /* WIN NT timestamp fix
bbe */
#endif
#define T_STAMP_3LEN 21 /* WIN NT timestamp fix
bbe */
/* jen TIME_ACC start */

#define BLANKS ""
#define READMODE "r0"
#define WRITEMODE "w0"
#define APPENDMODE "a0"
#define mem_error(xx) \
{ fprintf(stderr, "\n--Out of memory when %s.\n",xx); }
/* Display out-of-memory and end */

#define TPCDBATCH_MIN(x,y) ((x) < (y) ? (x) : (y))
/* Returns the smaller of both x and y */
#define TPCDBATCH_MAX(x,y) ((x) > (y) ? (x) :
(y)) /* @d22817 tlg */
/* Returns the larger of both x and y */

```

```

/** Defines needed for decimal conversion */
#define SQLZ_DYNLINK
#define TRUE 1
#define LEFT 1
#define RIGHT 0
#define FALSE 0
#define sqlrx_get_left_nibble(byte) (((unsigned char)(byte))
>> 4)

#define sqlrx_get_right_nibble(byte) ((unsigned char) (byte
& 'x0f'))
#define SQL_MAXDECIMAL 31
#define SQLRX_PREFERRED_PLUS 0x0c

/** Timer-necessary defines for portability */
#if (defined (SQLOS2) || defined (SQLWINT)) ||
defined (SQLWIN) || defined (SQLDOS)
typedef struct timeb Timer_struct;
#else
typedef struct timeval Timer_struct;
#endif

/* sleep time between starting subsequent tpcdbatches
running UF1 and UF2 */
#define UF1_SLEEP 1
#define UF2_SLEEP 1
#define UF_DEADLOCK_SLEEP 1 /* sleep between
deadlock retries in UF1,UF2 */

#define MAXWAIT 50 /* maximum retries for deadlock
encounters */

#define DEBUG 0 /* to be set to 1 for diagnostic purposes
if needed */
/* #define UF1DEBUG 1 */
/* #define UF2DEBUG 1 */

```

tpcdbatch.sqc

```

/*****
*****
*
* TPCDBATCH.SQC
*
* Revision History:
*
* 21 Dec 95 jen Corrected calculation of geometric mean to
include in the
* count of statements the update functions.
* 03 Jan 96 jen Corrected calculation of arithmetic mean to
not include the
* timings for the update functions. (only want
query timings
* as part of arithmetic mean)
* 15 Jan 96 jen Added extra timestamps to the update
functions.
* 22 Jan 96 jen Get rid of checking of short_time....we
always use the long
* timings.
* Fixed timings to print query/uf times rounded up
to 0.1 seconds
* and uses these rounded time values in subsequent
calculations
* Fixed bug where last seed in mseedme file wasn't
getting read

```

- * correctly - EOF processing done too soon.
- *
 - * 22 Feb 96 kbs port to NT
 - * 26 Mar 96 kbs Fix to avoid counting UFs as queries for min max
 - * 27 Jun 97 wlc Temporarily fixed deadlock problems when doing UF1, UF2
 - * 30 Jul 97 wlc Add in support for load_update and TPCD_SPLIT_DELETES
 - * 13 Aug 97 wlc fixed UF1 log file formatting problem,
 - * using TPCD_TMP_DIR for temp files instead of /tmp,
 - * make summary table fit in 80-column,
 - * fixed UF2 # of deleted rows reporting problem
 - * 18 Aug 97 wlc added command line support for inlistmax
 - * 20 Aug 97 wlc added support for runthroughput without UF
 - * 27 Aug 97 aph Replaced hardcoded 'tpcdaudit' with getenv("TPCD_AUDIT_DIR")
 - * 05 Sep 97 wlc fixing free() problem in NT
 - * 26 Sep 97 kmw change FLOAT processing in echo_sqlda and print_headings
 - * 10 Oct 97 jen add lock table in share mode for staging tables
 - * 21 Oct 97 jen added explicit rollback on failure of uf1
 - * 27 Oct 97 jen don't update TPCD.xxxx.update.pair.num if not running UFs in
 - * throughput run
 - * 01 Nov 97 jen temp code to do a prep then execute stmt in UFs so we can
 - * get timings
 - * 03 Nov 97 jen realigned UF code for readability
 - * pushed UF2 commit into loop for inlistmax
 - * fixed UF2 code so rollback performed
 - * 04 Nov 97 jen Added code to handle vldb
 - * 06 Nov 97 jen Commented out temp code for prep then execute stmts using
 - * TPCD_PREPARETIME def
 - * Updated version number to 2.2
 - * send all output during update functions to output files, not
 - * stderr
 - * 10 Nov 97 jen jenCI Updated version number to 2.3
 - * Added handling of TPCD_CONCURRENT_INSERTS. Change control of
 - * chunk processing to use the concurrent_inserts value as the
 - * control. Now the inserts will be run in TPCD_CONCURRENT_INSERTS
 - * sets, each having concurrent_inserts/
 - * 13 Nov 97 jen jen DEADLOCK. Fixed bug that Alex found where deadlock count
 - * (maxwait) was incremented on every execution of the stmt as
 - * opposed to just when deadlock really happened.
 - * 14 Nov 97 jen jenSEM - fix up error reporting on semaphore failure
 - * sem_op now returns failure to caller so caller can report where
 - * failure has happened.
 - * Forced dbname to be upper case, and all other parts of update
 - * pair number to be lowercase
 - * 15 Nov 97 jen SEED Reworked code to grab the seed from the seed file. Now
 - * reusing seeds between runs, so power run will always use first
 - * seed, throughput will use the 2nd - #stream+1 seeds
 - *

- * 13 Jan 98 jen LONG Increase stmt_str to be able to hold inlists with larger
 - * order key numbers
- * 04 Mar 98 jen IMPORT added support for TPCD_UPDATE_IMPORT to choose whether
 - * using import or load api's for loading data into the staging
 - * tables
- * 04 Mar 98 jen TIMER changed from using gettimeofday to gettimeofday for unix
- * 01 Apr 98 jen Fixed IMPORT code to do the proper checking on strcmp (ie !strcmp)
- * 01 Apr 98 jen removed code to handle vldb - not needed
 - * Upgraded version to 2.4 for (chunk
- * 01 Apr 98 jen Fixed up import code on NT so the variable is recognized in the
 - * children
- * 25 May 98 sks Reworked some of the environment variable code so consolidate as
 - * much as possible. Not all complete because of differences in
 - * the way nt and AIX calls (and starts stuff in background) for UFs
- * 29 May 98 jen REUSE_STAGE Changed UF1 so we reuse the same staging tables
 - * instead of having a new set for each update pair
- * 06 Jul 98 jen Removed locking of staging tables since they are created with
 - * locksize table now
- * 06 Jul 98 jen 912RETRY - added code to retry query execution on 912 as well
 - * as 911
- * 07 Jul 98 jen Fixed summary_table() so 1000x adjustment not based on UF (setting
 - * of max and min pointers
 - * Added generic SleepSome function to handle NT vs AIX sleep differences
- * 01 Apr 98 djd Added change to permit the use of table functions for UF1.
 - * to enable this set TPCD_UPDATE_IMPORT to if in TPCD.SETUP file.
 - * MERGED this into base copy on Jul 07
- * 10 Jul 98 jen haider's fix for 'outstream' var for error processing in
 - * runUF1_fn and runUF2_fn
 - * Updated version to 2.5
- * 25 Sep 98 jen Added stream number printing into mpqry* files and increases
 - * accuracy of timestamp in mpqry (and mts*qry*) files
- * 06 Oct 98 jen TIME_ACC Added accuracy of timestamp in mpqry (and mts*qry*)
 - * files. Cleaned up misuse of Sleep and flushed buffers on
 - * deadlocks
- * 19 Oct 98 kbs fix UF2_fn to correctly count rows deleted in case of deadlock
- * 20 Oct 98 kbs rewrite UF2 and UF2_fn for static SQL with staging table
- * 23 Oct 98 jen Cleaned up retrying of order/lineitem on lineitem deadlock in UF1
- * 24 Oct 98 jen Used load_uf1 and load_uf2 instead of general load_updates
- * 26 Oct 98 kbs inject the UF1 with a single staging table
- * 02 Nov 98 jen Fixed processing of multiple chunks in uf2 so don't duplicate
- * 21 Nov 98 kmw Fixed BIGINT
- * 05 Dec 98 aph Moved runUF1_fn() and runUF2_fn() into a separate file tpcdUF.sqc

```

*          so that it can be bound separately with a different
isolation level.
* 21 dec 98 aph Integrated Jennifer's QppD calculation
(rounding & adjustment) fixes.
* 22 dec 98 aph For UFs during Throughput run, defer
CONNECT until children launched.
* 28 dec 98 aph Removed error_check() call after
CONNECT RESET
* 29 dec 98 aph For UFs do not COMMIT in tpcdbatch.sqc.
COMMITs happen in tpcdUF.sqc.
* 18 jan 99 kal replaced header with #include "tpcdbatch.h"
* 27 may 99 bbeaton from (03 mar 99 jen) Fixed SUN fix
that wasn't compatible with
*          NT (using %D %T instead of %x %X for strftime)
* 16 jun 99 jen Added missing LPCTSTR cast of semaphore
file name for NT
* 17 jun 99 jen SEMA Changes semaphore file for update
functions to look for tpcd.setup
*          not for the orders.*** update data file
* 21 jul 99 bbeaton Added semaphore control that allows
runpower to be run as two
*          separate streams (update and query). This
involves the use of
*          two semaphores to be used as it executes in three
different
*          sections. The first is the update inserts. The next
is the query
*          stream which is started with the update stream,
but waits until
*          the inserts are complete. The third section is the
update deletes
*          which execute after the queries are complete.
* 21 jul 99 bbeaton Added functions to handle semaphore
creation, control, etc.
* 21 jul 99 bbeaton Modified output to mp*inter files. It
now only outputs
*          intermediate data that will be calculated by
calcmetricp.pl. This
*          is a result of the runpower being split into two
streams and thus
*          tpcdbatch not having access to all data.
* 21 jul 99 bbeaton The start time for runpower UF2 now
does not start until after
*          the query stream is complete so that its wait time
is not included
*          NOTE: The wait time that the first UF1 in
runthroughput still
*          in cludes the wait period that occurs waiting on
queries.
*****
*****/

/* included in tpcdbatch.sqc and tpcdUF.sqc */

#include "tpcdbatch.h"

/*****
*****/

/* global structure containing elements passed between
different functions */
/*****
*****/

struct global_struct
{
    struct stmt_info  *s_info_ptr;          /* ptr to stmt_info list
*/
    struct stmt_info  *s_info_stop_ptr;     /* ptr to last struct
in list */
    struct comm_line_opt *c_l_opt;          /* ptr to
comm_line_opt struct */

```

```

    struct ctrl_flags  *c_flags;            /* ptr to ctrl_flags
struct */
    Timer_struct      stream_start_time;    /* start time for
stream TIME_ACC */
    Timer_struct      stream_end_time;      /* end time for
stream TIME_ACC */
    char              file_time_stamp[50];  /* time stamp for
output files */
    double            scale_factor;         /* scale factor of
database */
    char              run_dir[150];         /* directory for output
files */
    int               copy_on_load;         /* indication of whether
or not */

/* to do use a copy directory */
/* (equiv to COPY YES) on

load */

/* default is FALSE */
long               lSeed;                 /* seed used to generate the

*/

/* queries for this particular */
/* run. */
FILE              *stream_list;           /* ptr to query list file
*/
char              update_num_file[150];    /* name of file that
keeps track */

/* of which update pairs have

run */
char              sem_file[150];          /* semaphore name */
char              sem_file2[150];         /* semaphore name bbe
*/
FILE              *stream_report_file;     /* file to report start
stop */

/* progress of the stream */
};

```

```

/*****
*****/

/* New type declaration to store details about SQL statement
*/
/*****
*****/

```

```

struct stmt_info
{
    long             max_rows_fetch;
    long             max_rows_out;
    int              query_block;           /* @d30369 tjg
*/
    unsigned int     stmt_num;              /* @d24993
tjg */
    double           elapse_time;           /* @d24993
tjg */
    double           adjusted_time;
    char             start_stamp[50];       /* start time stamp for
block */
    char             end_stamp[50];         /* end time stamp for
block */
    char             tag[50];               /* block tag */
    char             qry_description[100];
    struct stmt_info *next;                /* @d24993
tjg */
};

```

```

/*****
*****/

```

```

/* Structure containing command line options
*/
/*****
*****/
struct comm_line_opt
{
/* @d2275 tlg */

char      str_file_name[256]; /* output filename
*/
char      infile[256]; /* input filename */
int       intStreamNum; /* integer version of stream
number */
int       a_commit; /* auto-commit flag */
int       short_time; /* time interval flag */
int       update;
int       outfile;
};

/*****
*****/
/* Structure used to hold precision for decimal numbers
*/
/*****
*****/
struct declen
{ /* kmw */
unsigned char m; /* # of digits left of decimal */
unsigned char n; /* # of digits right of decimal */
};

/*****
*****/
/* Structure containing control flags passed between
functions */
/*****
*****/
struct ctrl_flags
{
/* @d25594 tlg */
int eo_infile;
int time_stamp;
int eo_block; /* @d30369 tlg
*/
int select_status;
};

/*****
*****/
/* Function Prototypes */
/*****
*****/
int SleepSome( int amount );
int get_env_vars(void);
int Get_SQL_stmt(struct global_struct *g_struct);

void print_headings (struct sqllda *sqllda, int *col_lengths);
/* @d22817 tlg */
void echo_sqllda(struct sqllda *sqllda, int *col_lengths);
void allocate_sqllda(struct sqllda *sqllda);

void get_start_time(Timer_struct *start_time);
double get_elapsed_time (Timer_struct *start_time);

long error_check(void); /* @d28763
tlg */
void dumpCa(struct sqlca*); /*kmw*/

void display_usage(void);

```

```

char *uppercase(char *string);
char *lowercase(char *string);
void comm_line_parse(int argc, char *argv[], struct
global_struct *g_struct);
int sqlrxd2a(char *decptr, char *asciiptr, short prec, short scal);
void init_setup(int argc, char *argv[], struct global_struct
*g_struct);
void runUF1( struct global_struct *g_struct, int updatePair );
void runUF2( struct global_struct *g_struct, int updatePair );

/* These need to be extern because they're in another SQC
file. aph 981205 */
/*extern void runUF1_fn( int updatePair, int i );*/ /*
aph 981205 */
/*extern void runUF2_fn( int updatePair, int i, int
numChunks );*/ /* aph 981205 */
/* Added four new arguments because SQL host vars can't be
global. aph 981205 */
extern void runUF1_fn ( int updatePair, int i, char *dbname,
char *userid, char *passwd );
extern void runUF2_fn ( int updatePair, int
thisConcurrentDelete, int numChunks, char *dbname, char
*userid, char *passwd );

int sem_op (int semid, int semnum, int value);

char *get_time_stamp(int form, Timer_struct
*timer_pointer); /* TIME_ACC jen */
void summary_table (struct global_struct *g_struct);
void free_sqllda (struct sqllda *sqllda, int select_status); /*
@d30369 tlg */
void output_file(struct global_struct *g_struct);
int PreSQLprocess(struct global_struct *g_struct,
Timer_struct *start_time);
void SQLprocess(struct global_struct *g_struct);
int PostSQLprocess(struct global_struct *g_struct,
Timer_struct *start_time);
int cleanup(struct global_struct *g_struct);

/* Semaphore control functions */
void create_semaphores(struct global_struct *g_struct);
void throughput_wait(struct global_struct *g_struct);
void runpower_wait(struct global_struct *g_struct, int
sem_num);
void release_semaphore(struct global_struct *g_struct, int
sem_num);
#ifdef SQLWINT
HANDLE open_semaphore(struct global_struct *g_struct, int
num);
#else
int open_semaphore(struct global_struct *g_struct);
#endif

EXEC SQL INCLUDE SQLCA;

/*****
*****/
/* Declare the SQL host variables. */
/*****
*****/
EXEC SQL BEGIN DECLARE SECTION;

char stmt_str1[4000] = "\0"; /* Assume max SQL
statement
of 4000 char */
struct {
/* jen LONG */
short len;
char data[32700];
} stmt_str; /* jen LONG */

```

```

char  dbname[9] = "\0";
char  userid[9] = "\0";
char  passwd[9] = "\0";
char  sourcefile[256];      /* used for semaphores and
table functions? */
sqlint32 chunk = 0;        /* jenCI counter for within the
set of chunks */

EXEC SQL END DECLARE SECTION;

/*****
*****/
/* Declare the global variables. */
/*****
*****/
struct sqlda *sqlda;        /* SQL Descriptor area */

/* Global environment variables (sks May 25 98) */
char env_tpcd_dbname[100];
char env_user[100];
char env_tpcd_audit_dir[150];
char env_tpcd_path_delim[2];
char env_tpcd_tmp_dir[150];
char env_tpcd_run_on_multiple_nodes[10];
char env_tpcd_copy_dir[150];
char env_tpcd_update_import[10];

/* Other globals */
FILE *instream, *outstream; /* File pointers
*/
int verbose = 0; /* Verbose option flag */
int semcontrol = 1; /* allows/disallows
semaphores usage */
int updatePairStart; /* update pair to start at */
int currentUpdatePair; /* update pair running
*/
int updatePairStop; /* update pair to stop before
*/
char newtime[50] = "\0"; /* Des - moved from
get_time_stamp */
char outstreamfilename[256]; /* store filename of
outstream
wlc 081397 */
int inlistmax = 400; /* define # of keys to delete
at a time
wlc 081897 */
int sqlda_allocated = 0; /* fixing free() problem in
NT
wlc 090597 */
int iImportStagingTbl=0; /* IMPORT use import
or load (default) */
char temp_time_stamp[50]; /* holds end timestamp
to be copied into start_time_stamp of next query bbeaton */
Timer_struct temp_time_struct; /* holds end time
value to be copied into start_time of next query bbeaton */

/* constants for the semaphores used; 1 for throughput and 2
for power */
#define INSERT_POWER_SEM 1
#define QUERY_POWER_SEM 2
#define THROUGHPUT_SEM 1

/*****
*****/
/* Start main program processing. */
/*****
*****/
int main(int argc, char *argv[])
{

```

```

struct comm_line_opt c_l_opt = { "\0", "\0", 0, 1, 0, 0, 0 };
/* command line options */
Timer_struct start_time; /* start point for elapsed
time */

struct stmt_info s_info = { -1, -1, 0, 1, -1, -1, "\0", "\0",
"\0", "\0", NULL };
/* first stmt_info structure */

struct ctrl_flags c_flags = { 0, 1, 0,
TPCDBATCH_SELECT };
/* structure holding ctrl flags
passed between functions */

/* TIME_ACC jen start */
#if defined (SQLUNIX) || defined (SQLAIX)
struct global_struct g_struct =
{ NULL, NULL, NULL, NULL, {0,0}, {0,0}, "\0", 0.1,
"\0", FALSE, 0,
NULL, "\0", "\0", "\0", NULL };

#elif defined (SQLOS2) || defined (SQLWINT) || defined
(SQLWIN) || defined (SQLDOS)
struct global_struct g_struct =
{ NULL, NULL, NULL, NULL, {0,0,0,0}, {0,0,0,0}, "\0",
0.1, "\0", FALSE, 0,
NULL, "\0", "\0", "\0", NULL };
#else
#error Unknown operating system
#endif
/* TIME_ACC jen end */

get_start_time(&start_time);

/* Get environment variables */
if (get_env_vars() != 0)
return -1;

/* perform setup and initialization and get process id of
agent */
outstream = stdout;
g_struct.c_flags = &c_flags;

g_struct.s_info_ptr = &s_info;
g_struct.c_l_opt = &c_l_opt;

init_setup(argc, argv, &g_struct); /* @d22275 tjj */

if ((g_struct.c_l_opt->update == 1) && (semcontrol == 1))
/* runpower: wait for insert function to complete */
/* waiting on the INSERT_POWER_SEM semaphore */
runpower_wait(&g_struct, INSERT_POWER_SEM);

strcpy(temp_time_stamp, "0");

/*****
*****/
* This is the transition from the "driver" to the "SUT"
*
*****/
/*****
*****/

/*****
*****/

```

```

/* Read in each statement, prepare, execute, and send output
to file. */

/*****
*****/

while (!c_flags.eo_infile) { /* Check to see if there's no
more input */

    c_flags.eo_block = 0;

    if (c_l_opt.outfile)
        output_file(&g_struct); /* determine appropriate name for
output files */
    if ((g_struct.c_l_opt->update != 3) && (g_struct.c_l_opt-
>update != 4))
    {
        if (!strcmp(temp_time_stamp, "0")) /* if first query, get
timestamp */
        {
            get_start_time(&start_time);
            strcpy(g_struct.s_info_ptr->start_stamp,
                get_time_stamp(T_STAMP_FORM_3,&start_time
)); /* TIME_ACC jen*/
        }
        else /* else get the end timestamp of previous query */
        {
            strcpy(g_struct.s_info_ptr->start_stamp,
temp_time_stamp);
            start_time = temp_time_struct;
        }
        /* write the start timestamp to the file...if this is not a
qualification */
        /* run, then write the seed used as well */

        fprintf( outstream,"Start timestamp %*.*s\n",
            T_STAMP_3LEN,T_STAMP_3LEN, /*
TIME_ACC jen*/
            g_struct.s_info_ptr->start_stamp);
        if (c_l_opt.intStreamNum >= 0)
        {
            if (g_struct.lSeed == -1)
            {
                fprintf( outstream,"Using default qgen seed file");
            }
            else
                fprintf( outstream,"Seed used = %ld",g_struct.lSeed);

            fprintf( outstream,"\n");
        }
    }
    do { /* Loop through these statements as long as we
haven't reached
        the end of the input file or the end of a block of
statements
        */

        /*** Read in the next statment ***/
        c_flags.select_status=Get_SQL_stmt(&g_struct);

        if (PreSQLprocess(&g_struct, &start_time) == FALSE)
            /* if after reading the next statement we see that we
should
            exit this loop (i.e. eof, update functions, etc...), get out
            */
            break;

    } while (1);

/*****
*****/

```

```

*
* The SQLprocess function implements the
implementation specific layer.
* It can handle arbitrary SQL statements.
*
*
*****
*****/

/* If we've got up to here then
processing a regular SQL statement */
SQLprocess(&g_struct);

} while ((!c_flags.eo_block) && (!c_flags.eo_infile)); /*
@d30369 tjg */

if (PostSQLprocess(&g_struct,&start_time) == FALSE)
/* if we've reached the end of the input file, then get out
of this loop (i.e. no more statements). Otherwise get
elapsed times and display info about rows */
break;

} /* end of for loop for multiple SQL statements */

g_struct.s_info_ptr = &s_info; /* set the global pointer to
start of
        linked list */

cleanup(&g_struct); /* finish some semaphore stuff, cleanup
files,
        and print out summary table */

/*****
*****/

*
* In cleanup we make the transition back from the "SUT"
to the "driver"
*
*****
*****/

return(0);

} /* end of main */

/*****
*****/

/* Generic form of Sleep */
int SleepSome( int amount)
{
#ifdef SQLWINT
    sleep (amount);
#else
    // Sleep (amount*1000); /* 10x for NT DJD Changed
"sleep" to "Sleep" */
    Sleep (amount); /* 10x for NT DJD Changed "sleep"
to "Sleep" */
#endif
    return 0;
}

/*****
*****/

/*****
*****/

```

```

/* Get environment variables. (sks May 25 98)
*/
/*****
*****/
int get_env_vars(void) {
    if (strcpy(env_tpcd_dbname, getenv("TPCD_DBNAME"))
    == NULL) {
        fprintf(stderr, "\n The environment variable
$TPCD_DBNAME is not setup correctly.\n");
        return -1;
    }
    if (strcpy(env_user, getenv("USER")) == NULL) {
        fprintf(stderr, "\n The environment variable $USER is not
setup correctly.\n");
        return -1;
    }
    if (strcpy(env_tpcd_audit_dir,
getenv("TPCD_AUDIT_DIR")) == NULL) {
        fprintf(stderr, "\n The environment variable
$TPCD_AUDIT_DIR is not setup correctly.\n");
        return -1;
    }
    if (strcpy(env_tpcd_tmp_dir, getenv("TPCD_TMP_DIR"))
    == NULL) {
        fprintf(stderr, "\n The environment variable
$TPCD_TMP_DIR is not setup correctly.\n");
        return -1;
    }
}
#ifdef 0
    if (strcpy(env_tpcd_path_delim,
getenv("TPCD_PATH_DELIM")) == NULL ||
        (strcmp(env_tpcd_path_delim, "/") &&
strcmp(env_tpcd_path_delim, "\"))){
        fprintf(stderr, "\n The environment variable
$TPCD_PATH_DELIM is not setup correctly ,
env_tpcd_path_delim%s'.\n", env_tpcd_path_delim);

        return -1;
    }
}
#endif
    strcpy( env_tpcd_path_delim , "/" ); /*kmw*/
    if (strcpy(env_tpcd_run_on_multiple_nodes,
getenv("TPCD_RUN_ON_MULTIPLE_NODES")) ==
NULL) {
        fprintf(stderr, "\n The environment variable
$TPCD_RUN_ON_MULTIPLE_NODES");
        fprintf(stderr, "\n is not setup correctly.\n");
        return -1;
    }
    if (strcpy(env_tpcd_copy_dir,
getenv("TPCD_COPY_DIR")) == NULL) {
        fprintf(stderr, "\n The environment variable
$TPCD_COPY_DIR is not setup correctly.\n");
        return -1;
    }
    /* If TPCD_UPDATE_IMPORT is not set then, the default
is set to false, */
    /* which is done in init_setup subroutine
*/
    strcpy(env_tpcd_update_import,
getenv("TPCD_UPDATE_IMPORT"));

    return 0;
}

/*****
*****/
/* Get the SQL statement and any control statements from
input. */

```

```

/*****
*****/
int Get_SQL_stmt(struct global_struct *g_struct)

{
    char input_ln[256] = "\0"; /* buffer for 1 line of text
*/
    char temp_str[4000] = "\0"; /* temp string for SQL stmt
*/
    char control_str[256] = "\0"; /* control string
*/

    char *test_semi; /* ptr to test for semicolon
*/
    char *control_opt; /* ptr used in control_str
parsing */
    char *select_status; /* ptr to first word in query
*/
    char *temp_ptr; /* general purpose temp ptr
*/

    int good_sql = 0; /* good-sql stmt flag @d23684
tjg */
    int stmt_num_flag = 1; /* first line of SQL stmt flag
*/
    int eostmt = 0; /* flag to signal end of statement
*/

    stmt_str.data[0]='\0'; /* Initialize statement buffer
*/

    if (verbose)
        fprintf (stderr, "\n-----
\n");
    fprintf (outstream, "\n-----
\n");

    do {
        /* Read in lines from input one at a time */
        fscanf(instream, "%s\n", input_ln);
        if (strstr(input_ln, "-") == input_ln) { /* Skip all --
comments */

            if (strstr(input_ln, "-#SET") == input_ln) {
                /* Store control string but
keep going to find SQL stmt */
                strcpy(control_str, input_ln);
                if (verbose)
                    fprintf(stderr, "%s\n", uppercase(control_str));
                    fprintf(outstream, "%s\n", uppercase(control_str));

                /* Start parsing control str. and update appropriate
vars. */
                control_opt = strtok(control_str, " ");
                while (control_opt != NULL) {
                    if (strcmp(control_opt, "-#SET")) { /* Skip the
#SET token */
                        if (!strcmp(control_opt, "ROWS_FETCH"))
                            g_struct->s_info_ptr->max_rows_fetch =
atoi(strtok(NULL, " "));

                        if (!strcmp(control_opt, "ROWS_OUT"))
                            g_struct->s_info_ptr->max_rows_out =
atoi(strtok(NULL, " "));
                    }

                    control_opt = strtok(NULL, " ");
                }
            }
        }
    }
}

```



```

/* if the block option has been set, then check if we've
reached the end of a block of statements */
if (g_struct->s_info_ptr->query_block) /*
@d30369 tjg */
if (strstr(input_ln, "--EOBLK") == input_ln) {
g_struct->c_flags->eo_block = 1;
return TPCDBATCH_EOBLOCK;
}
if (strstr(input_ln, "-- Query") == input_ln)
strcpy(g_struct->s_info_ptr-
>qry_description, input_ln);

if (strstr(input_ln, "--#TAG") == input_ln)
strcpy(g_struct->s_info_ptr->tag, (input_ln+sizeof("--
#TAG")));

/* if we're using update functions, return that info
appropriately */
if (g_struct->c_l_opt->update != 0) {
if (strstr(input_ln, "--#INSERT") == input_ln)
return TPCDBATCH_INSERT;

if (strstr(input_ln, "--#DELETE") == input_ln)
return TPCDBATCH_DELETE;
}

if (strstr(input_ln, "--#COMMENT") == input_ln) {
/* @d25594 tjg */
temp_ptr = (input_ln + 11); /* User-specified
comments go to
the outfile */
if (verbose)
fprintf(stderr, "%s\n", temp_ptr);
fprintf(outstream, "%s\n", temp_ptr);
}

eostmt=0;
}

/* Need this hack here to check if there's any more empty
lines left
in the input file. Continue only if there aren't any */
else if (strcmp(input_ln, "\0")) /* HACK */ { /* A
regular SQL statement */
if (stmt_num_flag) { /* print this out only if it's the
first line
of the SQL statement. We only want
this
line to appear once per statement */
if (verbose)
fprintf(stderr, "%s\n", g_struct->s_info_ptr-
>qry_description);
fprintf(outstream, "%s\n", g_struct->s_info_ptr-
>qry_description);

if (verbose)
fprintf(stderr, "\nTag: %5.5s Stream: %d
Sequence number: %d\n",
g_struct->s_info_ptr->tag, g_struct->c_l_opt-
>intStreamNum,
g_struct->s_info_ptr->stmt_num);
/*jen0925*/
fprintf(outstream, "\nTag: %5.5s Stream: %d
Sequence number: %d\n",
g_struct->s_info_ptr->tag, g_struct->c_l_opt-
>intStreamNum,
g_struct->s_info_ptr->stmt_num);
/*jen0925*/

```

```

/* Turn off this flag once the number has been printed
*/
stmt_num_flag = 0;

} /** Print out this heading the first time you encounter
a
non-comment statement */

/* Test to see if we've reached the end of a statement */
good_sql = TRUE; /* @d23684
tjg */
test_semi = strstr(input_ln, ";");
if (test_semi == NULL) { /* if there's no semi-colon
keep on going */
strcat(stmt_str.data, input_ln); /* jen
LONG */
strcat(stmt_str.data, " "); /* jen LONG
*/
stmt_str.len = (short)strlen(stmt_str.data); /*
jen LONG */
eostmt = 0;
}

else { /* else replace the ; with a \0 and
continue */
*test_semi = '\0';
strcat(stmt_str.data, input_ln); /* jen
LONG */
stmt_str.len = (short)strlen(stmt_str.data); /*
jen LONG */
eostmt = 1;
}

fprintf(outstream, "\n%s", input_ln);
if (verbose)
fprintf(stderr, "\n%s", input_ln);
}

/** Test to see if we've reached the EOF. Get out if that's
the case */
if (feof(instream)) {
eostmt = TRUE;
g_struct->c_flags->eo_infile = TRUE; /*
@d22275 tjg */
}

} while (!eostmt);

fprintf(outstream, "\n");
if (verbose)
fprintf(stderr, "\n");

/** erase the old control string */
strcpy(control_str, "\0");

/** Determine whether statement is a SELECT or other
SQL */
if (good_sql) {
strcpy(temp_str, stmt_str.data); /* jen
LONG */
uppercase(temp_str); /* Make sure that select is made to
SELECT */
select_status = strtok(temp_str, " ");
if ( (stmt_str.data[0] == '(') ||
(!strcmp(select_status, "SELECT")) ||
(!strcmp(select_status, "VALUES")) ||
(!strcmp(select_status, "WITH")))
return TPCDBATCH_SELECT;
else

```

```

        return TPCDBATCH_NONSELECT;
    }

    /** If you go through a file with just comments or control
    statments
    with no SQL, there's nothing to process...Exit
    TPCDBATCH **/

    else /* @d23684 tlg */
        return TPCDBATCH_NONSQL;

} /* Get_SQL_stmt */

/*****
*****
*****/
/* allocate_sqlda -- This routine allocates space for the
SQLDA. */
/*****
*****
*****/

void allocate_sqlda(struct sqlda *sqlda)
{
    int loopvar; /* Loop counter */

    for (loopvar=0; loopvar<sqlda->sqln; loopvar++)
    {
        switch (sqlda->sqlvar[loopvar].sqltype)
        {
            case SQL_TYP_INTEGER: /*
INTEGER */
                case SQL_TYP_NINTEGER:
                    if ((sqlda->sqlvar[loopvar].sqldata=
                        (TPCDBATCH_CHAR *)malloc(sizeof(sqlint32))) == NULL)
                        mem_error("allocating INTEGER");
                    break;
                case SQL_TYP_BIGINT: /* BIGINT */
                    /*kmwBIGINT*/
                    case SQL_TYP_NBIGINT:
                        /*##ifdef SQLWINT */
                        /* if ((sqlda->sqlvar[loopvar].sqldata= */
                        /* (TPCDBATCH_CHAR */
                        /* *)malloc(sizeof(sqlint64))) == NULL)*/
                        /* #else */
                        if ((sqlda->sqlvar[loopvar].sqldata=
                            (TPCDBATCH_CHAR *)malloc(sizeof(sqlint64))) == NULL)
                            /* #endif */
                                mem_error("allocating BIGINT");
                                break;
                                case SQL_TYP_CHAR: /* CHAR */
                                case SQL_TYP_NCHAR:
                                    if ((sqlda->sqlvar[loopvar].sqldata=
                                        (TPCDBATCH_CHAR *)calloc(256,sizeof(char))) == NULL)
                                            mem_error("allocating CHAR/VARCHAR");
                                            break;
                                            case SQL_TYP_VARCHAR: /*
VARCHAR */
                                            case SQL_TYP_NVARCHAR:
                                                if ((sqlda->sqlvar[loopvar].sqldata=
                                                    (TPCDBATCH_CHAR *)calloc(4002,sizeof(char))) == NULL)
                                                        mem_error("allocating CHAR/VARCHAR");
                                                        break;
                                                        case SQL_TYP_LONG: /* LONG
VARCHAR */
                                                        case SQL_TYP_NLONG:

```

```

                    if ((sqlda->sqlvar[loopvar].sqldata=
                        (TPCDBATCH_CHAR *)calloc(32702,sizeof(char))) == NULL)
                            mem_error("allocating VARCHAR/LONG
VARCHAR");
                            break;
                            case SQL_TYP_FLOAT: /* FLOAT */
                            case SQL_TYP_NFLOAT:
                                if ((sqlda->sqlvar[loopvar].sqldata=
                                    (TPCDBATCH_CHAR *)malloc(sizeof(double))) == NULL)
                                        mem_error("allocating FLOAT");
                                        break;
                                        case SQL_TYP_SMALL: /*
SMALLINT */
                                        case SQL_TYP_NSMALL:
                                            if ((sqlda->sqlvar[loopvar].sqldata=
                                                (TPCDBATCH_CHAR *)malloc(sizeof(short)))
                                                    == NULL)
                                                        mem_error("allocating SMALLINT");
                                                        break;
                                                        case SQL_TYP_DECIMAL: /*
DECIMAL */
                                                        case SQL_TYP_NDECIMAL:
                                                            if ((sqlda->sqlvar[loopvar].sqldata=
                                                                (TPCDBATCH_CHAR *)malloc(20)) ==
                                                                    NULL)
                                                                        mem_error("allocating DECIMAL");
                                                                        break;
                                                                        case SQL_TYP_CSTR: /* VARCHAR
(null terminated) */
                                                                        case SQL_TYP_NCSTR:
                                                                            if ((sqlda->sqlvar[loopvar].sqldata=
                                                                                (TPCDBATCH_CHAR *)calloc(4001,sizeof(char))) == NULL)
                                                                                    mem_error("allocating CHAR/VARCHAR");
                                                                                    break;
                                                                                    case SQL_TYP_DATE: /* DATE */
                                                                                    case SQL_TYP_NDATE:
                                                                                        if ((sqlda->sqlvar[loopvar].sqldata=
                                                                                            (TPCDBATCH_CHAR *)calloc(13,sizeof(char))) == NULL)
                                                                                                mem_error("allocating DATE");
                                                                                                break;
                                                                                                case SQL_TYP_TIME: /* TIME */
                                                                                                case SQL_TYP_NTIME:
                                                                                                    if ((sqlda->sqlvar[loopvar].sqldata=
                                                                                                        (TPCDBATCH_CHAR *)calloc(11,sizeof(char))) == NULL)
                                                                                                            mem_error("allocating TIME");
                                                                                                            break;
                                                                                                            case SQL_TYP_STAMP: /*
TIMESTAMP */
                                                                                                            case SQL_TYP_NSTAMP:
                                                                                                                if ((sqlda->sqlvar[loopvar].sqldata=
                                                                                                                    (TPCDBATCH_CHAR *)calloc(29,sizeof(char))) == NULL)
                                                                                                                        mem_error("allocating TIMESTAMP");
                                                                                                                        break;
                                                                                                                        }
                                                                                                                        if ((sqlda->sqlvar[loopvar].sqlind=
                                                                                                                            (short *)calloc(1,sizeof(short))) == NULL)
                                                                                                                                mem_error("allocating indicator");
                                                                                                                                }
                                                                                                                                }
                                                                                                                                sqlda_allocated = 1; /* fix free() problem on NT
                                                                                                                                wlc 090597 */
                                                                                                                                return; /* allocate_sqlda */
                                                                                                                                }

```

```

/*****
*****
/**** echo_sqlda -- This routine displays the contents of an
SQLDA. */
/****
*****

void echo_sqlda(struct sqlda *sqlda, int *col_lengths)
{
    int col;                /* Column counter */

    int col_type;           /* Type of column */

    char temp_string[100] = "\0"; /* Temporary string
*/
    char decimal_string[100] = "\0"; /* String holding
decimals */
    char *temp_ptr;

    TPCDBATCH_CHAR m,n;      /* precision and
accuracy
                        for decimal conversion */

    for (col=0; col<sqlda->sqld; col++) /* Loop through
column count */
    {
        col_type=sqlda->sqlvar[col].sqltype; /*
@d22817 tjj */

        if (*sqlda->sqlvar[col].sqlind) /*
@d30369 tjj */
            fprintf(outstream, "%* n/a ",(col_lengths[col]-3));
        else
            switch (col_type)
            {
                case SQL_TYP_INTEGER:
                case SQL_TYP_NINTEGER:

                    fprintf(outstream, "%*ld ",col_lengths[col],
                        *(sqlint32 *)sqlda->sqlvar[col].sqldata));
                    break;

                case SQL_TYP_BIGINT: /*kmwBIGINT*/
                case SQL_TYP_NBIGINT:
/*#ifdef SQLWINT*/
/*      fprintf(outstream, "%*I64d ",col_lengths[col],*/
/*      *(__int64 *)sqlda->sqlvar[col].sqldata));*/
/*#else*/
                    fprintf(outstream, "%*lld ",col_lengths[col],
                        *(sqlint64 *)sqlda->sqlvar[col].sqldata));
/*#endif*/
                    break;

                case SQL_TYP_CHAR:
                case SQL_TYP_NCHAR:

                    fprintf(outstream, "%-*s ",col_lengths[col],sqlda-
>sqlvar[col].sqldata);
                    break;
                case SQL_TYP_VARCHAR:
                case SQL_TYP_NVARCHAR:
                case SQL_TYP_LONG:
                case SQL_TYP_NLONG: /*
@d30369 tjj */
                    ((struct sqlchar *)sqlda->sqlvar[col].sqldata)->
data[((struct sqlchar *)sqlda->sqlvar[col].sqldata)-
>length] = '\0';

```

```

        fprintf(outstream, "%-*s ",
            col_lengths[col],
            ((struct sqlchar *)sqlda->sqlvar[col].sqldata)-
>data);
        break;
        case SQL_TYP_FLOAT:
        case SQL_TYP_NFLOAT:
        { /* kmw */
            if ( fabs(*(double *)sqlda->sqlvar[col].sqldata))
                <
                TPCDBATCH_PRINT_FLOAT_MAX )
                fprintf(outstream, "%#.3f ",col_lengths[col],
                    *(double *)sqlda->sqlvar[col].sqldata));
            else
                fprintf(outstream, "%*e ",col_lengths[col],
                    *(double *)sqlda->sqlvar[col].sqldata));
            break;
        }

        case SQL_TYP_SMALL:
        case SQL_TYP_NSMALL:

            fprintf(outstream, "%*hd ",col_lengths[col],
                *(short *)sqlda->sqlvar[col].sqldata));
            break;
        case SQL_TYP_DECIMAL:
        case SQL_TYP_NDECIMAL:

            m=(*(struct declen *)&sqlda->sqlvar[col].sqlen).m;
            n=(*(struct declen *)&sqlda->sqlvar[col].sqlen).n;
            if (sqlrxd2a((char *)sqlda-
>sqlvar[col].sqldata,temp_string,m,n) != 0)
            {
                fprintf(stderr, "\nThe decimal value could not be
converted.\n");
                exit (-1);
            }
            else {

                temp_ptr = temp_string;

                if (*temp_ptr == '-')
                    strcpy(decimal_string, "-");

                else
                    strcpy(decimal_string, " ");

                for (temp_ptr = temp_string + 1; *temp_ptr == '0';
temp_ptr++)
                    ;

                strcat(decimal_string,temp_ptr);
                fprintf(outstream, "%*s
",col_lengths[col],decimal_string);
            }

            break;

        case SQL_TYP_CSTR:
        case SQL_TYP_NCSTR:
        case SQL_TYP_DATE:
        case SQL_TYP_NDATE:
        case SQL_TYP_TIME:
        case SQL_TYP_NTIME:
        case SQL_TYP_STAMP:
        case SQL_TYP_NSTAMP:
            sqlda->sqlvar[col].sqldata[sqlda-
>sqlvar[col].sqlen+1]='\0';
            strcpy(temp_string,(char *)sqlda-
>sqlvar[col].sqldata);

```

```

        fprintf(outstream, "%-*s",
(col_lengths[col]),temp_string);
        break;

        default:
        fprintf(stderr, "Unknown column type (%d).
Aborting.\n",col_type);
        break;
    }
}

fprintf(outstream, "\n");

return;
}

/*****
*****/
/* Calculate the elapsed time. */
/*****
*****/

void get_start_time(Timer_struct *start_time)
{
    int rc = 0;

#ifdef (SQLOS2) || defined (SQLWINT) || defined
(SQLWIN) || defined (SQLDOS)
    /*@d33143aha*/
    ftime (start_time);
#elif defined (SQLSNI)
    rc = gettimeofday(start_time);
#elif defined (SQLPTX)
    gettimeofday_mapped(start_time);
    rc = 0; /* gettimeofday_mapped returns void */
#elif defined (SQLUNIX) || defined (SQLAIX)
    /*TIMER jen*/
    rc = gettimeofday(start_time,NULL);
#else
    #error Unknown operating system
#endif

    if (rc != 0) {
        fprintf(stderr, "Timer call failed, aborting test \nExiting
tpcdbatch..\n");
        exit(-1);
    }
}

/*****
*****/
/* Calculate and return the elapsed time given a starting time.
*/
/*****
*****/

double get_elapsed_time ( Timer_struct *start_time)
{
    int      status = 0;
    Timer_struct  end_time;
    double      result = -1.0;
#ifdef SQLWINT
    long int      result_sec;
    long int      result_usec;
#endif

#ifdef (SQLSNI)

```

```

        status = gettimeofday(&end_time);
#elif defined (SQLPTX)
    gettimeofday_mapped(&end_time);
    status = 0; /* gettimeofday_mapped returns void */
#elif defined (SQLUNIX) || defined (SQLAIX)
    status = gettimeofday(&end_time,NULL);
/*TIMER jen*/
#elif defined (SQLOS2) || defined (SQLWINT) || defined
(SQLWIN) || defined (SQLDOS)
    ftime(&end_time);
#else
    /** If another operating system */
    #error Unknown operating system
#endif

    if (status != 0)
        fprintf(stderr, "Bad return from gettimeofday, don't trust
timer results...\n");

    else
    {
#ifdef (SQLUNIX) || defined (SQLAIX)
        result_sec = end_time.tv_sec - start_time->tv_sec;
        result = (double) result_sec;
        /* TIMER used micro seconds with timeval (not
nanoseconds) */
        if ((start_time->tv_usec > 0) && \
            (start_time->tv_usec < 1000000) && \
            (end_time.tv_usec > 0) && \
            (end_time.tv_usec < 1000000))
        {
            result_usec = end_time.tv_usec - start_time->tv_usec;
            result = (double) result_sec + ((double)
result_usec/1000000);
        }
#elif defined (SQLOS2) || defined (SQLWINT) || defined
(SQLWIN) || defined (SQLDOS)
        result = (double) (end_time.time - start_time->time);
        result = result * 1000 + (end_time.millitm - start_time-
>millitm);
        result = result/1000;
#else
    #error Unknown operating system
#endif

    }

    /*
    * translate the time to that rounded to the CLOSEST 0.1
seconds as
    * required by the TPC-D spec.  ROUNDING
    */
    /* result = (double)((long)((result + 0.099999) *
10))/10.0;*/
    result = (double)((long)((result + 0.05) * 10))/10.0;
    return (result);
}

void dumpCa(struct sqlca *ca)
{
    int i;
    fprintf(outstream, "***** DUMP OF
SQLCA *****\n");
    fprintf(outstream, "SQLCAID : %s\n", ca->sqlcaid);
    fprintf(outstream, "SQLCABC : %d\n", ca->sqlcabc);
    fprintf(outstream, "SQLCODE : %d\n", ca->sqlcode);
    fprintf(outstream, "SQLERRML : %d\n", ca->sqlerrml);
    fprintf(outstream, "SQLERRMC : %.*s\n", ca->sqlerrml,
ca->sqlerrmc);
    fprintf(outstream, "SQLERRP : %s\n", ca->sqlerrp);

```

```

for (i = 0; i < 6; i++)
{
    fprintf(outstream, "SQLERRD[%d]: %d\n", i, ca->sqlerrd[i]);
}
fprintf(outstream, "SQLWARN : %.11s\n", ca->sqlwarn);
fprintf(outstream, "SQLSTATE : %.5s\n", ca->sqlstate);
fprintf(outstream, "***** END OF
SQLCA DUMP *****\n");
return;
}

```

```

/*****
*****

```

```

/* error_check */
/* This function prints the contents of the sqlca error
information */
/* structure. */
/*****
*****

```

```

long error_check(void)
{
    char    buffer[512]="\0";
    unsigned short i;
    struct sqlca temp_sqlca; /* temporary sqlca */ /*
@d30369 tjg */

    temp_sqlca.sqlcode = 0; /* initialize the temporary
sqlca to
        avoid any memory problems */

```

```

if (sqlca.sqlcode != 0) {
    sqlaintp(buffer, sizeof(buffer), 80, &sqlca);
    fprintf(stderr, "\n%0.200s\n", buffer);
    fprintf(outstream, "\n%0.200s\n", buffer);

    /* Decode the SQLCA in more detail KBS 98/09/28 */
    if ((sqlca.sqlerrml) /* there's one or more tokens */
        && (sqlca.sqlerrml < sizeof(sqlca.sqlerrmc)) /* and
field not full */
    )
    {
        char *tokptr;
        int tokl;
        *(sqlca.sqlerrmc + sqlca.sqlerrml) = '\0'; /* prevent
strtok from scanning beyond end */
        fprintf(stderr, "\n SQLCA: tokens:\n");
        fprintf(outstream, "\n SQLCA: tokens:\n");
        tokptr=strtok(sqlca.sqlerrmc, "\xff");
        while ( tokptr &&
            ( tokl = (int)(sizeof(sqlca.sqlerrmc) - (tokptr-
sqlca.sqlerrmc))) > 0)
        {
            fprintf(stderr, "%.s\n", tokl, tokptr);
            fprintf(outstream, "%.s\n", tokl, tokptr);
            tokptr=strtok(NULL, "\xff");
        }
        fprintf(stderr, "\n SQLCA: errp= %0.8s, errd 1-6= %d
%d %d %d %d %d\n",
            sqlca.sqlerrp, sqlca.sqlerrd[0], sqlca.sqlerrd[1],
sqlca.sqlerrd[2],
            sqlca.sqlerrd[3], sqlca.sqlerrd[4], sqlca.sqlerrd[5]);
        fprintf(outstream, "\n SQLCA: errp= %0.8s, errd 1-6=
%d %d %d %d %d %d\n",
            sqlca.sqlerrp, sqlca.sqlerrd[0], sqlca.sqlerrd[1],
sqlca.sqlerrd[2],

```

```

sqlca.sqlerrd[3], sqlca.sqlerrd[4], sqlca.sqlerrd[5]);

```

```

temp_sqlca = sqlca; /* Make a copy of sqlca in case it
gets changed
        in the next statement below */ /*
@d30369 tjg */

```

```

/* Determine if the error is critical or a connection can
be made */

```

```

EXEC SQL CONNECT ; /*
@d28763 tjg */

```

```

if (sqlca.sqlcode == SQLC_RC_NOSUDB ) { /* no
connection exists */

```

```

/*Print out header for DUMP*/
fprintf(outstream,
"*****\n");
fprintf(outstream, "CONTENTS OF SQLCA
*\n");
fprintf(outstream,
"*****\n");

```

```

/*Print out contents of SQLCA variables*/
fprintf(outstream, "SQLCABC = %ld\n",
temp_sqlca.sqlcabc);
fprintf(outstream, "SQLCODE = %ld\n",
temp_sqlca.sqlcode);
fprintf(outstream, "SQLERRMC = %0.70s\n",
temp_sqlca.sqlerrmc);
fprintf(outstream, "SQLERRP = %0.8s\n",
temp_sqlca.sqlerrp);

```

```

for (i = 0; i < 6; i++)
{
    fprintf(outstream, "sqlerrd[%d] = %lu\n", i,
temp_sqlca.sqlerrd[i]);
}

```

```

fprintf(outstream, "SQLWARN = %0.11s\n",
temp_sqlca.sqlwarn);
fprintf(outstream, "SQLSTATE = %0.5s\n",
temp_sqlca.sqlstate);

```

```

fprintf(stderr, "\nCritical SQLCODE. Exiting
TPCDBATCH\n");
exit(-1);
}
}
return (temp_sqlca.sqlcode);
} /* error_check */

```

```

/*****
**/

```

```

/* Displays a help screen */
/*****
**/
void display_usage()
{
    printf("\ntpcdbatch -- version
%s", TPCDBATCH_VERSION);
    printf("\n\nSyntax is:\n");
    printf("tpcdbatch [-d dbname] [-f file_name] [-l file_name]
[-r on/off]");
    printf("\n        [-v on/off] [-b on/off] [-u p/t1/t2]");
}

```

```

printf("\n      [-s scale_factor] [-n stream_num] [-m
inlistmax] [-h]\n");
printf("\n where: -d Database name");
printf("\n          Default - dbname set in
$DB2DBDFT");
printf("\n      -f Input file containing SQL statements");
printf("\n          Default- stdin");
printf("\n      -l Input file containing list of statement
numbers");
printf("\n      -r Create set of output files containing query
results");
printf("\n          Default- off");
printf("\n      -v Verbose. Sends information to stderr
during");
printf("\n          query processing");
printf("\n          Default - off");
printf("\n      -b Process groups of statements as blocks
");
printf("\n          instead of individually.");
printf("\n          Default- off");
printf("\n      -u Update streams: p  - for power test");
printf("\n          t  - for throughput test
without");
printf("\n          UFs (run this instead of
t2)");
printf("\n          t1 - for throughput test step
1");
printf("\n          only running queries");
printf("\n          t2 - for throughput test step
2");
printf("\n          running update functions");
printf("\n      -s Scale factor");
printf("\n          Default- 0.1");
printf("\n      -n Stream number");
printf("\n          Default- 0");
printf("\n          Qualification - -1");
printf("\n          Power - 0");
printf("\n          Throughput - >= 1 (actual number
depends on the current query stream");
printf("\n      -m Maximum number of keys to delete at a
time");
printf("\n          Default- 400");
printf("\n      -h Display this help screen");
printf("\n      -p turns smeaphores on or off");
printf("\n          Default- off");

printf("\n\nControl statements specifying output and
performance details");
printf("\n can be included before SQL statements; they will
apply for");
printf("\n that and subsequent statements until updated.");

printf("\n\nSyntax:  -#SET <control option> <value>");
printf("\n option value default");
printf("\n ROWS_FETCH -1 to n -1 (all rows fetched
from answer set)");
printf("\n ROWS_OUT -1 to n -1 (all fetched rows
sent to output)");
printf("\n -#TAG tag (user specified tag name
for sequence#)");
printf("\n -#COMMENT comment (user specified
comments for output)");
printf("\n Note: All statements executed with ISOLATION
LEVEL RR");
printf("\n and must be terminated with semi-
colons.\n");
exit(1);
}

```

```

/*****
/* Converts a string to upper case characters */
/*****
char *uppercase( char *string )
{
    char *c; /* temp char used to convert word to upper
case */

    for ( c = string; *c != '\0'; c++)
        *c = (char) toupper( (int) *c );

    return (string);
}

/*****
/* Converts a string to lower case characters */
/*****
char *lowercase( char *string )
{
    char *c; /* temp char used to convert word to lower
case */

    for ( c = string; *c != '\0'; c++)
        *c = (char) tolower( (int) *c );

    return (string);
}

/*****
***
/* Parses and processes command line options. */
/*****
***

void comm_line_parse(int argc, char *argv[], struct
global_struct *g_struct)
{
    char authent_info[40] = "\0";
    char *testptr;
    int loopvar = 0;

    int comm_opt = 0;
#ifdef PARALLEL_UPDATES
    int running_updates=0;
    int updatePair=1;
    int updateStream=1;
    int function;
    int copyOnOrOff;
    int deleteChunk=0; /*DELjen */
#endif

    while ((loopvar < argc) && (argc != 1)) {

        if (*argv[loopvar] == '-') {

            switch(*(argv[loopvar]+1)) {

                case 'f': /* @d26350 tjg */
                case 'F':
                    strcpy(g_struct->c_l_opt-
>infile,argv[++loopvar]);
                    break;

                case 'l': /* @d26350 tjg */
                case 'L': strcpy(g_struct->c_l_opt-
>str_file_name,argv[++loopvar]);
                    break;

                case 'r': /* @d26350 tjg */

```

```

case 'R' :
    if (!strcmp(uppercase(argv[++loopvar]),"ON"))
        g_struct->c_l_opt->outfile=1;
    else
        g_struct->c_l_opt->outfile=0;
    break;

case 'd' :
case 'D' :
    /* @d26350 tlg */
    strcpy(dbname,argv[++loopvar]);
    break;

case 'v' :
case 'V' :
    /* @d26350 tlg */
    if (!strcmp(uppercase(argv[++loopvar]),"ON"))
        verbose=1;
    else
        verbose=0;
    break;

case 'u' :
case 'U' :
    /* @d26350 tlg */
    g_struct->c_l_opt->update=-1; /* init to invalid
number */
    if (!strcmp(uppercase(argv[++loopvar]),"P1"))
        g_struct->c_l_opt->update=1; /* power query
stream */
    if (!strcmp(uppercase(argv[loopvar]),"P2"))
        g_struct->c_l_opt->update=3; /* power update
with updates */
    if (!strcmp(uppercase(argv[loopvar]),"P"))
        g_struct->c_l_opt->update=4; /* power update
without updates */
    if (!strcmp(uppercase(argv[loopvar]),"T1"))
        g_struct->c_l_opt->update=0; /*throughput query
stream */
    if (!strcmp(uppercase(argv[loopvar]),"T2"))
        g_struct->c_l_opt->update=2; /* throughput
update with updates */
    if (!strcmp(uppercase(argv[loopvar]),"T"))
        g_struct->c_l_opt->update=5; /* throughput
update without updates */

    break;

case 'b' :
case 'B' :
    /* @d26350 tlg */
    if (!strcmp(uppercase(argv[++loopvar]),"ON"))
        g_struct->s_info_pte->query_block=1;
    else
        g_struct->s_info_pte->query_block=0;
    break;

case 'n' :
case 'N' :
    /* @d26350 tlg */
    g_struct->c_l_opt->intStreamNum =
atoi(argv[++loopvar]);
    break;

case 's' :
case 'S' :
    /* @d26350 tlg */
    g_struct->
>scale_factor=atoi(argv[++loopvar]); break;

case 'h':
case 'H' :
    /* @d26350 tlg */
    display_usage();
    break;

case 'm' :
case 'M' :

```

```

inlistmax = atoi(argv[++loopvar]); /* wlc 081897 */
break;

case 'p' :
case 'P' :
    if (!strcmp(uppercase(argv[++loopvar]),"ON")) /*
bbe 072599 */
        semcontrol = 1;
    else
        semcontrol = 0;
    break;

#ifdef PARALLEL_UPDATES
case 'i':
    updatePair = atoi (argv[++loopvar]);
#endif
#ifdef UF2DEBUG
    fprintf(stderr, "updatePair = %d\n",updatePair);
    fflush(stderr);
#endif
    break;

case 'j':
    function = atoi (argv[++loopvar]);
#ifdef UF2DEBUG
    fprintf(stderr, "function = %d\n",function);
    fflush(stderr);
#endif
    break;

case 'k':
    updateStream = atoi (argv [++loopvar]);
#ifdef UF2DEBUG
    fprintf (stderr, "updateStream =
%d\n",updateStream);
    fflush(stderr);
#endif
    break;

case 'x':
    /*DEL jen -x is chunk*/
    deleteChunk = atoi (argv[++loopvar]); /* to delete
for this */
#ifdef UF2DEBUG
    fprintf (stderr, "DelChunk = %d\n",deleteChunk);
    fflush(stderr);
#endif
    break;
    /* invocation */

case 'z':
    running_updates = 1;
    break;
#endif
default :
    fprintf(stderr," An invalid option has been set\n");
    display_usage();
    break;

} /** end switch */
} /** end if */

loopvar ++;
} /** end while */

/* checking if -u option is set */
if (g_struct->c_l_opt->update == -1) {
    fprintf(stderr, "-u option is not set, exiting ...\n");
    exit(1);
}

```

```

#ifdef PARALLEL_UPDATES
    if (running_updates) {
        if (updatePair == -1) {
            fprintf(stderr, "The parameters to tpcedbatch have not
            been passed correctly\n");
            exit (-1);
        }
        else {
            /* check to see if we are to use copy on for the load */
            if ((getenv("TPCD_LOG") != NULL) &&

(!strcmp(uppercase(getenv("TPCD_LOG")), "YES")))
            {
                /* okay, we have set LOG_RETAIN on so we need to
            use copy directory */
                copyOnOrOff = TRUE;
            }
            else
            {
                /* log retain off don't use copy directory */
                copyOnOrOff = FALSE;
            }

            if (function == 1)
                /* runUF1_fn (updatePair, updateStream); aph
            981205 */
                runUF1_fn (updatePair, updateStream, dbname,
            userid, passwd);
            else
                if (function == 2) {
                    fprintf(stderr, "A-Calling runUF2_fn %d %d %d
            ... \n",

                        updatePair, updateStream,
            deleteChunk);
                    /* runUF2_fn (updatePair, updateStream,
            deleteChunk); aph 981205 */
                    runUF2_fn (updatePair, updateStream, deleteChunk,
            dbname, userid, passwd);
                }
                else {
                    fprintf(stderr, "Wrong function to tpcedbatch\n");
                    exit (-1);
                }
                exit (0);
            }
        }
    }
#endif /* PARALLEL_UPDATES */

    /* If no database name is given, then use the one specified
    in the
    environment variable DB2DBDFT, otherwise error */
    if (!strcmp(dbname, "0")) {
        testptr = getenv("DB2DBDFT");
        if (testptr == NULL) {
            fprintf(stderr, "\nNo database name has been specified
            on command ");
            fprintf(stderr, "line\n\nor in environment variable
            DB2DBDFT.");
            display_usage();
        }
        else
            strcpy(dbname, testptr);
    }

    if (g_struct->c_l_opt->outfile &&
        !strcmp(g_struct->c_l_opt->str_file_name, "0")) {
        fprintf(stderr, "\nMust specify input file for statement
        list.\n");
        display_usage();
    }

```

```

    }
}

/*****
***
*/
/* Converts DECIMAL values to ASCII text */
/*****
***
*/
int sqlrx_d2a(
    /*kmw*/
    /* C++ */char *decptr,
    /* C++ */char *asciiptr,
    short prec,
    short scal)
{
    /* */
    int allzero = TRUE;
    /* C++ */char *srcptr;
    unsigned char sign;
    /* C++ */char *targptr, decimal_point = '.';
    int rc = 0;
    /*kmw*/
    int tmpint, src_nibble;
    int count, j, limit[3];

    targptr = &asciiptr[ prec + 1];
    *(1 + targptr) = '\0';
    srcptr = decptr + prec/2;

    /* Validity check sign nibble */
    if (((sign = sqlrx_get_right_nibble( *srcptr )) < 0x0a)
        || (prec > SQL_MAXDECIMAL) || (prec < scal ))
    {
        goto exit;
    } /* end end if invalid sign value */

    limit[ 0 ] = scal; limit[ 1 ] = prec - scal; limit[ 2 ] = 0;
    src_nibble = LEFT;
    for( j = 0 ; j < 2 ; j++ )
    {
        for( count = limit[ j ] ; count > 0 ; count-- )
        {
            tmpint = ( (src_nibble == LEFT)?
                sqlrx_get_left_nibble( *srcptr-- ) :
                sqlrx_get_right_nibble( *srcptr ) );
            if( tmpint > 9 )
            {
                goto exit;
            }
            else
                *targptr-- = (/* C++ */char)tmpint + '0';
            src_nibble = ((src_nibble == LEFT) ? RIGHT : LEFT);
            if ( tmpint != 0 ) allzero = FALSE;
        } /* end for scal > 0 */

        if( j == 0 )
            *targptr-- = decimal_point;
        else
            *targptr = (/* C++ */char)((allzero
                || (sign ==
                SQLRX_PREFERRED_PLUS)
                || (sign == 0x0a)
                || (sign == 0x0e)
                || (sign == 0x0f)) ?
                '+' : '-');
    } /* end for limit[ j++ ] > 0 */

    exit :

```



```

if( rc < 0 )
{
    printf ("The decimal conversion has failed\n");
    exit (-1);

}

return(rc);
} /** sqlrxd2a **/

/*****
*****/
/* Does some setup and initialization like parsing command
line */
/* and connecting to database. Returns process id of agent.
*/
/*****
*****/

void init_setup(int argc, char *argv[], struct global_struct
*g_struct)
{
    int connect=0;
#ifdef SQLWINT
    char *pid;
#endif
    char temparray[256]="\0";
    int loopvar=0;
    FILE *updateFP;
    FILE *fpSeed;
    char file_name[256] = "\0";
    short seedEntry;
    long lSeed;
    int i;

    /*** Parse and process command line options **/
    comm_line_parse (argc,argv,g_struct);

/*****
*****/
/* Start the mainline report processing. */
/*****
*****/

    if (!strcmp(g_struct->c_l_opt->infile,"0")) {
        instream=stdin;
    }
    else {
        instream=NULL;
        if ( (instream = fopen(g_struct->c_l_opt->infile,
READMODE)) == NULL ) {
            fprintf(outstream, "The input file could not be
opened.\n\n");
            fprintf(stdout, "Make sure that the filename is
correct.\n");
            fprintf(stdout, "filename = %s\n",g_struct->c_l_opt-
>infile);
            exit(1);

        } /* open the input file if specified */
    }

    /* IMPORT (begin) - determine whether we should use the
IMPORT api or */
    /* LOAD api for loading into the staging tables, default is
load */
    if (env_tpcd_update_import != NULL)
    {
        if
(!strcmp(uppercase(env_tpcd_update_import),"TRUE"))

```

```

{
    iImportStagingTbl = 1; /* use import */
}
/* DJD */
else if
(!strcmp(uppercase(env_tpcd_update_import),"TF"))
{
    iImportStagingTbl = 2; /* Table Functions */
}
}

/* IMPORT (end) */

/* we want to print the seed in the output files to show what
seed was */
/* used to generate the queries. */
/* if intStreamNum is -1 then we are running a qualification
database */
/* and the default seed has been used so skip this section */
if (g_struct->c_l_opt->intStreamNum >= 0)
{
    /* check to make sure the TPCD_RUNNUMBER
environment variable is set. We */
    /* use this and the stream number to determine which
seed was used to */
    /* generate the current set of queries */
    if (getenv("TPCD_RUNNUMBER") == NULL)
    {
        fprintf(stderr, "\nThe TPCD_RUNNUMBER
environment variable is not set");
        fprintf(stderr, "....exiting\n");
        exit(1);
    }
    if (getenv("TPCD_NUMSTREAM") == NULL)
    {
        fprintf(stderr, "\nThe TPCD_NUMSTREAM
environment variable is not set");
        fprintf(stderr, "....exiting\n");
        exit(1);
    }
}

/*****
*****/
* SEED jen
* we want to print the seed used in the output files. For
the seed usage
* we can now reuse the seeds from run to run, therefore
all the power runs
* will use the 1st seed in the file, and the throughput
streams will use
* the 2nd to #streams+1 seeds.
* determine the seed to use...e.g. given 3 streams will
have the following:
*
*          Entry in seed file
*  TEST    Stream Number  Run 1  Run 2
*  power    0             1      1
*  throughput 1           2      2
*           2             3      3
*           3             4      4

/*****
*****/
seedEntry = g_struct->c_l_opt->intStreamNum + 1;
/* end SEED jen */
/* open the generated seed file...if not there, try the
default */

```

```

    sprintf(file_name, "%s%sauditruns%sseedme",
env_tpcd_audit_dir,
    env_tpcd_path_delim, env_tpcd_path_delim);

    if ((fpSeed = fopen(file_name, READMODE)) == NULL
)
    {
        fprintf(stderr, "\nCannot open the seed file, please
ensure that\n");
        fprintf(stderr, "the file exists. filename =
%s\n", file_name);
        exit(-1);
    }
    for (i = 1; i <= seedEntry; i++)
    {
        if (feof(fpSeed))
        {
            lSeed = -1; /* seed not available for some reason */
        }
        fscanf(fpSeed, "%ld\n", &lSeed);
    }
    g_struct->lSeed = lSeed;
    fclose(fpSeed);
}

/* check to see if we are to use copy on for the load */
if ((getenv("TPCD_LOG") != NULL) &&
(!strcmp(uppercase(getenv("TPCD_LOG")), "YES")))
{
    /* okay, we have set LOG_RETAIN on so we need to use
copy directory */
    g_struct->copy_on_load = TRUE;
}
else
{
    /* log retain off don't use copy directory */
    g_struct->copy_on_load = FALSE;
}

/*****
*****/
/* Make sure that DB2 is started. */
/* CONNECT now unless this is a UF stream for a
Throughput test. */
/* (aph 98/12/22) */
/*****
*****/

if (g_struct->c_l_opt->update > 1)
{
    /* This is an update function stream in a throughput run.
*/
    /* Just make sure that DB2 is started. Each UF child will
CONNECT itself. */
    if (verbose) fprintf(stderr, "\nStarting the DB2 Database
Manager Now\n");
    sqlestar ();
}
else
{
    /* In all other cases, CONNECT to the target database. */
    do
    {
        if (!strcmp(userid, "\0")) /** No authentication
provided */
            EXEC SQL CONNECT TO :dbname;
        else EXEC SQL CONNECT TO :dbname USER
:userid USING :passwd;
        if (sqlca.sqlcode == SQLE_RC_NOSTARTG) {
            if (verbose)

```

```

        fprintf(stderr, "\nStarting the DB2 Database
Manager Now\n");
        sqlestar ();
        connect=0;
    }
    else connect=1;
    } while (!connect);
    error_check();
}

/*****
*****/
* All session initialization is performed at connect time or
immediately *
* following and is complete before starting the stream.
*

*****/

/* Get start timestamp for stream */
get_start_time(&(g_struct->stream_start_time)); /*
TIME_ACC jen*/
strcpy(g_struct->file_time_stamp,
    get_time_stamp(T_STAMP_FORM_2, &(g_struct -
>stream_start_time))); /* TIME_ACC jen*/

if (getenv("TPCD_RUN_DIR") != NULL)
    strcpy(g_struct->run_dir, getenv("TPCD_RUN_DIR"));
else
    strcpy(g_struct->run_dir, ".");

/* if we are running a throughput test, then we must report
the */
/* stream count information...we will report one file per
stream */
/* and amalgamate them after all streams have completed
*/
/* if the number of streams is greater than 0 then this is a
throughput test*/
switch (g_struct->c_l_opt->update)
{
    case (2):
    case (5):
        /* update throughput function stream */
        sprintf(file_name, "%s%sstrcntuf.%s", g_struct -
>run_dir,
            env_tpcd_path_delim, g_struct -
>file_time_stamp);
        break;
    case (3):
    case (4):
        /* update power function stream */
        sprintf(file_name, "%s%spsprcntuf.%s", g_struct -
>run_dir,
            env_tpcd_path_delim, g_struct -
>file_time_stamp);
        break;
    case (1):
        /* power query stream */
        sprintf(file_name, "%s%spsprcnt%d.%s", g_struct -
>run_dir, env_tpcd_path_delim,
            g_struct->c_l_opt->intStreamNum, g_struct -
>file_time_stamp);
        break;
    case (0):
        /* throughput query stream */
        sprintf(file_name, "%s%sstrcnt%d.%s", g_struct -
>run_dir, env_tpcd_path_delim,

```

```

        g_struct->c_l_opt->intStreamNum,g_struct->
file_time_stamp);
        break;
    }

    if( (g_struct->stream_report_file = fopen(file_name,
WRITEMODE)) == NULL )
    {
        fprintf(stderr, "\nThe output file for the stream count
information\n");
        fprintf(stderr, "could not be opened, make sure the
filename is correct\n");
        fprintf(stderr, "filename = %s\n", file_name);
        exit(-1);
    }

    if (g_struct->c_l_opt->update > 1)
    {
        /* update function stream */
        fprintf(g_struct->stream_report_file,
"Update function stream starting at %*.*s\n",
T_STAMP_3LEN, T_STAMP_3LEN, /*
TIME_ACC jen*/
get_time_stamp(T_STAMP_FORM_3, &(g_struct->
stream_start_time))); /* TIME_ACC jen*/
    }
    else
    {
        /* query stream */
        fprintf(g_struct->stream_report_file,
"Stream number %d starting at %*.*s\n",
g_struct->c_l_opt->intStreamNum,
T_STAMP_3LEN, T_STAMP_3LEN, /*
TIME_ACC jen*/
get_time_stamp(T_STAMP_FORM_3, &(g_struct->
stream_start_time))); /* TIME_ACC jen*/
    }

#ifdef LINUX

        fclose(g_struct->stream_report_file);

#endif

    /* set up the update_num_file name so that if we do use
semaphores, */
    /* we will have a filename to generate the semkey */

    sprintf(g_struct->update_num_file,
"%s%s%s.%s.update.pair.num", env_tpcd_audit_dir,
env_tpcd_path_delim, uppercase(env_tpcd_dbname),
lowercase(env_user));
    sprintf(g_struct->sem_file, "%s.%s.semfile",
env_tpcd_dbname, env_user);
    if (g_struct->c_l_opt->intStreamNum == 0)
    {
        sprintf(g_struct->sem_file2, "%s.%s.semfile2",
env_tpcd_dbname, env_user);
    }
    if (verbose) { /* print out the update pair number file for
debugging */
        fprintf(stderr, "\n init_setup: strem %d update pair numb
file = %s\n",
g_struct->c_l_opt->intStreamNum, g_struct->
update_num_file);
    }

    /* update the
$TPCD_AUDIT_DIR/$TPCD_DBNAME.$USER.update.pai
r.num file */

```

```

    /* update pairs have been run */
    if ((g_struct->c_l_opt->update >= 1) && (g_struct->
c_l_opt->update < 4))
        /* on or onl, but not */ /* bbe or > 1 */
    {
        updateFP = fopen(g_struct->update_num_file, "r");
        if (updateFP != NULL )
        {
            fscanf(updateFP, "%d", &updatePairStart);
            fclose(updateFP);
            if (g_struct->c_l_opt->intStreamNum == 0) /* on, 1
update pair */
                updatePairStop = updatePairStart + 1;
            else /* only, multiple update pairs, stream number
will be total */
                updatePairStop = updatePairStart + g_struct->
c_l_opt->intStreamNum;
            currentUpdatePair = updatePairStart;

            if (updatePairStart <= 0)
            {
                fprintf(stderr, "updatePairStart is bogus!");
                exit(-1);
            }
        }
        else
        {
            fprintf(stderr, "\n %s not set up, set this \n", g_struct->
update_num_file);
            fprintf(stderr, "file to contain the number of the update
pair to \n");
            fprintf(stderr, "run and resubmit \n");
            exit(-1);
        }
    }

    return ;
}

/*****
*****/
/* A function to print out the column titles for a returned set
*/
/*****
*****/
void print_headings (struct sqllda *sqllda, int *col_lengths)
{
    int col = 0; /* Column number */
    int col_width = 0; /* width of column */
    int max_col_width = 0; /* maximum column width */
    /*
    int col_name_length = 0; /* sizeof column name
string */
    int col_type = 0; /* column type */

    int total_length = 0; /* accumulator var. for
length of column headings */
    int loopvar = 0;

    char col_name[256] = "\0";
    unsigned char m,n; /* precision and accuracy
for decimal conversion */

    fprintf (outstream, "\n");

    /*** loop through for each column in solution set
and determine the maximum column width ***/

    for (col = 0; col < sqllda->sqlld; col++) {

```

```

col_name_length=sqlda->sqlvar[col].sqlname.length;
col_type = sqlda->sqlvar[col].sqltype;
col_width = sqlda->sqlvar[col].sqllen;
strncpy(col_name,(char *)sqlda->sqlvar[col].sqlname.data,col_name_length);

switch (col_type)
{
case SQL_TYP_SMALL:
case SQL_TYP_NSMALL: /*
@d30369 tjg */
col_lengths[col] = TPCDBATCH_MAX
(col_name_length,6);
break;
case SQL_TYP_INTEGER:
case SQL_TYP_NINTEGER:
col_lengths[col] = TPCDBATCH_MAX
(col_name_length,11);
break;
case SQL_TYP_BIGINT: /*kmwBIGINT*/
case SQL_TYP_NBIGINT:
col_lengths[col] = TPCDBATCH_MAX
(col_name_length,19);
break;
case SQL_TYP_CSTR:
case SQL_TYP_NCSTR:
case SQL_TYP_DATE:
case SQL_TYP_NDATE:
case SQL_TYP_TIME:
case SQL_TYP_NTIME:
case SQL_TYP_STAMP:
case SQL_TYP_NSTAMP:
case SQL_TYP_CHAR:
case SQL_TYP_NCHAR:
case SQL_TYP_VARCHAR:
case SQL_TYP_NVARCHAR:
case SQL_TYP_LONG:
case SQL_TYP_NLONG:
col_lengths[col] = TPCDBATCH_MAX
(col_name_length,col_width);
break;

case SQL_TYP_FLOAT:
case SQL_TYP_NFLOAT:
/* kmw - note:
TPCDBATCH_PRINT_FLOAT_WIDTH > max long
identifier */
col_lengths[col] =
TPCDBATCH_PRINT_FLOAT_WIDTH;
break;

case SQL_TYP_DECIMAL:
case SQL_TYP_NDECIMAL:

m=(*(struct declen *)&sqlda->sqlvar[col].sqllen).m;
n=(*(struct declen *)&sqlda->sqlvar[col].sqllen).n;

col_lengths[col] = TPCDBATCH_MAX ((int)(m+n),
col_name_length);
/* Special handling for DECIMAL */ /* @d26350 tjg
*/
break;

default:
fprintf(stderr,"-Unknown column type (%d).
Aborting.\n",col_type);
break;
}

```

```

fprintf(outstream,"%6*.*s
",col_lengths[col],col_name_length,col_name);

total_length += (col_lengths[col] + 2); /* 2 is from
padding spaces */
}

fprintf(outstream,"\n");
for (loopvar=0; loopvar < total_length; loopvar++)
fprintf(outstream,"-");
fprintf(outstream,"\n");
}

/*****
*****/
/* Gets the current system time and prints it out */
/*****
*****/
char *get_time_stamp(int form, Timer_struct *time_pointer)
{
Timer_struct temp_stamp; /* TIME_ACC jen */
struct tm *tp;
size_t timeLength = 0;

/* TIME_ACC jen start */
if (time_pointer == (Timer_struct *)NULL)
get_start_time(&temp_stamp);
else
temp_stamp = *time_pointer;

#if defined (SQLUNIX) || defined (SQLAIX)
tp = localtime((time_t *)&(temp_stamp.tv_sec));
#elif defined (SQLOS2) || defined (SQLWINT) || defined
(SQLWIN) || defined (SQLDOS))
tp = localtime(&(temp_stamp.time));
#else
#error Unknown operating system
#endif
/* TIME_ACC jen stop */

if ((form == T_STAMP_FORM_1) || (form ==
T_STAMP_FORM_3))
{
/* SUN fix bbe start */
#if defined (SQLWINT) || defined (SQLWIN) || defined
(SQLOS2) || defined (SQLDOS))
timeLength = strftime(newtime,50,"%x %X",tp);
#elif defined (SQLUNIX) || defined (SQLAIX))
timeLength = strftime(newtime,50,"%D %T",tp); /*
SUN ...test this */
#else
#error Unknown operating system
#endif
/* SUN fix bbe stop */
/* TIME_ACC jen start */
if (form == T_STAMP_FORM_3)
{
/* concatenate the microsecond/milliseconds on the
end of the */
/*timestamp jen1006 */
#if defined (SQLUNIX) || defined (SQLAIX)

sprintf(newtime+timeLength,"%0.6d",temp_stamp.tv_usec);
#elif defined (SQLOS2) || defined (SQLWINT) || defined
(SQLWIN) || defined (SQLDOS))

sprintf(newtime+timeLength,"%0.3d",temp_stamp.millitm);
#else

```

```

#error Unknown operating system
#endif
    /* TIME_ACC jen stop*/
    }
}
else
    if (form == T_STAMP_FORM_2)
        strftime(newtime,50,"%y%m%d-%H%M%S",tp);

return (newtime);

}

/*****
*****
*/
/* Handle all the processing for the summary table
*/
/*****
*****
*/

void summary_table (struct global_struct *g_struct)
{
    double arith_mean = 0;
    double geo_mean = 0;
    int num_stmt = 0;
    int num_stmt_for_geo_mean = 0;

    double adjusted_a_mean = 0;
    double adjusted_g_mean = 0;
    double adjusted_g_mean_intern;
    double adjusted_max_time = 0;

    double Ts = 0; /* different TPC-D metrics */
    double Ts1;
    double Ts2;
    /* double QppD = 0; MARK
    double QthD = 0;
    double QphD = 0; */

    double db_size_frac_part = 0; /* stores the fractional
part of db size */
    double db_size = 0; /* size in numbers */
    char db_size_qualifier[3] = "\0"; /* MB, GB or TB */

    struct stmt_info
    {
        *s_info_ptr,
        *s_info_head_ptr,
        *max,
        *min;
    }

    /* Determine the size of the database from the scale factor
(1 SF = 1GB) */
    if (g_struct->scale_factor < 1.0) {
        db_size = g_struct->scale_factor * 1000;
        strcpy(db_size_qualifier, "MB");
    } else if (g_struct->scale_factor >= 1000.0) {
        db_size = g_struct->scale_factor / 1000;
        strcpy(db_size_qualifier, "TB");
    } else {
        db_size = g_struct->scale_factor;
        strcpy(db_size_qualifier, "GB");
    }

    /* computes the fractional part of db_size */
    db_size_frac_part = db_size - (int) db_size;

```

```

    s_info_ptr = g_struct->s_info_ptr; /* Just use a local copy
*/
    s_info_head_ptr = s_info_ptr;

    max = s_info_head_ptr;
    /* ensure that we are not already setting max to the UF
timings */
    while ( strstr(max->tag, "UF") != NULL )
        max = max->next;
    min = max;

    if (g_struct->c_l_opt->outfile) /* create the appropriate
output file */
        output_file(g_struct);

    /* write the seed used for this run unless it is a qualification
run */
    /* (qualification runs use the default seed for their queries)
or */
    /* unless it is the update function stream (no seeds used for
this) */
    /* (this is an update stream iff update is 2) */
    if ((g_struct->c_l_opt->intStreamNum >= 0) &&
        (g_struct->c_l_opt->update != 2))
    {
        if (g_struct->lSeed == -1)
        {
            fprintf( outstream, "\nUsing default qgen seed file");
        }
        else
            fprintf( outstream, "\nSeed used for current run =
%d", g_struct->lSeed);
        fprintf( outstream, "\n");
    }

    /* print out the stream number if we are in a throughput
stream and if */
    /* this is not the update stream portion of the throughput
test */
    if ( (g_struct->c_l_opt->intStreamNum > 0) &&
        (g_struct->c_l_opt->update != 2) )
    {
        fprintf( outstream, "Stream number = %d\n", g_struct -
>c_l_opt->intStreamNum);
    }
    /* print the stream start timestamp to the inter file */
    fprintf( outstream, "Stream start time stamp %*.s\n",
T_STAMP_3LEN, T_STAMP_3LEN, /*
TIME_ACC jen*/
get_time_stamp(T_STAMP_FORM_3, &(g_struct -
>stream_start_time))); /* TIME_ACC jen*/
    /* print the stream stop timestamp to the inter file */
    fprintf( outstream, "Stream stop time stamp %*.s\n",
T_STAMP_3LEN, T_STAMP_3LEN, /*
TIME_ACC jen*/
get_time_stamp(T_STAMP_FORM_3, &(g_struct -
>stream_end_time))); /* TIME_ACC jen*/

    fprintf( outstream, "\n\nSummary of
Results\n=====\n");
    fprintf( outstream,
"\nSequence # Elapsed Time Adjusted Time Start
Timestamp End Timestamp\n\n");

    /* Go through the linked list and determine which
statement had the
highest and lowest elapsed times */
    while ( (s_info_ptr != NULL) && (s_info_ptr != g_struct-
>s_info_stop_ptr) ) {

```

```

/* check if we are in an update function...if so, we do not
want to */
/* consider the update function times as the min or max
time */
if ( strstr(s_info_ptr->tag,"UF") == NULL )
{
/* we are not in an update function */
if (s_info_ptr->elapsed_time > max->elapsed_time)
max = s_info_ptr;
else
if ((s_info_ptr->elapsed_time < min->elapsed_time)
&& (s_info_ptr->elapsed_time > -1))
min = s_info_ptr;
}

s_info_ptr = s_info_ptr->next;

}

s_info_ptr = s_info_head_ptr;

/** Start from the first structure and go through until the
stop
pointer is reached */
while ( (s_info_ptr != NULL) && (s_info_ptr != g_struct-
>s_info_stop_ptr) ) {

if (s_info_ptr->elapsed_time != -1) {
s_info_ptr->adjusted_time = s_info_ptr->elapsed_time;
/* determine whether the elapsed times have to be
adjusted or not */
/* if this is an update function, we do not adjust the
elapsed time */
if ( strstr(s_info_ptr->tag,"UF") == NULL )
{
/* this is not an update function, adjust time if
necessary */
if (max->elapsed_time/min->elapsed_time > 1000)
{
/* jmc fix geo_mean calculation...round adjusted
time properly ROUNDING */
adjusted_max_time = max->elapsed_time/1000;
if (s_info_ptr->elapsed_time < adjusted_max_time)
{
s_info_ptr->adjusted_time =
(double)((long)((adjusted_max_time + 0.05) *
10))/10.0;
if (s_info_ptr->adjusted_time < 0.1)
s_info_ptr->adjusted_time = 0.1;
}
/*jmc fix geo_mean calculation...round adjusted
time properly ROUNDING end*/
}
}

/* a value was calculated */
fprintf (outstream,
"%5d %-5.5s %15.1f %15.1f %*.*s %*.*s\n",
s_info_ptr->stmt_num,s_info_ptr->tag,
s_info_ptr->elapsed_time,s_info_ptr-
>adjusted_time,
T_STAMP_1LEN,T_STAMP_1LEN,s_info_ptr-
>start_stamp, /* TIME_ACC jen*/
T_STAMP_1LEN,T_STAMP_1LEN,s_info_ptr-
>end_stamp); /* TIME_ACC jen*/

/* Only update arithmetic mean for queries not update
functions */
if ( strstr(s_info_ptr->tag,"UF") == NULL )
{

```

```

arith_mean += s_info_ptr->elapsed_time;
adjusted_a_mean += s_info_ptr->adjusted_time;
}

if (s_info_ptr->elapsed_time > 0) { /* don't bother
finding log of
numbers < 0 */
geo_mean += log(s_info_ptr->elapsed_time);
adjusted_g_mean += log(s_info_ptr->adjusted_time);
}

/* Only update num_stmt for queries not update
functions */
if ( strstr(s_info_ptr->tag,"UF") == NULL )
num_stmt ++;
num_stmt_for_geo_mean++;
}

else
fprintf (outstream,"%5d %-5.5s %-15s %-15s\n",
s_info_ptr->stmt_num,
s_info_ptr->tag,"Not Collected", "Not
Collected");

if (s_info_ptr != g_struct->s_info_stop_ptr)
s_info_ptr=s_info_ptr->next;
}

fprintf(outstream, "\n\nNumber of statements: %d\n\n",
s_info_ptr->stmt_num - 1);
/* Calculate the arithmetic and geometric means */

if (geo_mean != 0) { /*Used to test if arith_mean != 0
Don't bother doing any of this if the
elapsed time mean is 0 */
arith_mean = arith_mean / num_stmt;
adjusted_a_mean = adjusted_a_mean / num_stmt;
geo_mean = exp(geo_mean / num_stmt_for_geo_mean);
adjusted_g_mean_intern = adjusted_g_mean; /*MARK*/
adjusted_g_mean = exp(adjusted_g_mean /
num_stmt_for_geo_mean);
}

/* print out all the appropriate information including the
different TPC-D metrics */
/* do not bother with this if we are in an update only stream
*/
fprintf (outstream, "\nGeom. mean queries %7.3f
%15.3f\n",\
geo_mean,adjusted_g_mean);
if (g_struct->c_l_opt->update < 2)
{
fprintf (outstream, "Arith. mean queries %7.3f
%15.3f\n",\
arith_mean,adjusted_a_mean);

fprintf (outstream,
"\n\nMax Qry %-3.3s %15.1f %15.1f %*.*s
%*.*s\n",
max->tag,max->elapsed_time,max->adjusted_time,
T_STAMP_1LEN,T_STAMP_1LEN,max-
>start_stamp, /* TIME_ACC jen*/
T_STAMP_1LEN,T_STAMP_1LEN,max-
>end_stamp); /* TIME_ACC jen*/
fprintf (outstream,

```

```

        "Min Qry %-3.3s %15.1f %15.1f %*.*s %*.*s\n",
        min->tag,min->elapsed_time,min->adjusted_time,
        T_STAMP_1LEN,T_STAMP_1LEN,min-
>start_stamp, /* TIME_ACC jen*/
        T_STAMP_1LEN,T_STAMP_1LEN,min-
>end_stamp); /* TIME_ACC jen*/
    }

    if (g_struct->c_l_opt->intStreamNum == 0) {
        /* fprintf (outstream, "\n\nMetrics\n===== \n\n"); */

        /* Increase the Ts measurement by one second since the
        accuracy of our */
        /* timestamps is only to 1 second and if the start was at
        1.01 seconds, */
        /* and the end was at 5.99 seconds, we get a free second
        ... this will */
        /* be made explicit in the upcoming revision of the spec
        (after 1.0.1) */
        /* TIME_ACC jen start*/
        /* NOTE this can probably be better coded by changing
        get_elapsed_time */
        /* to just calculate the elapsed time give a start and an
        end time, and */
        /* to also give a precision for the calculation (sec,
        10ths....). The */
        /* call then will grab a timestamp before calling. Then
        we can get rid */
        /* of the if def...and just call get_elapsed_time (whcih can
        handle the */
        /* os differences on its own */

#ifdef SQLUNIX || defined (SQLAIX)
        Ts = g_struct->stream_end_time.tv_sec - g_struct-
>stream_start_time.tv_sec + 1;
        Ts1 = (double)g_struct->stream_start_time.tv_sec +
        ((double)g_struct->stream_start_time.tv_usec/1000000);
        Ts2 = (double)g_struct->stream_end_time.tv_sec +
        ((double)g_struct->stream_end_time.tv_usec/1000000);

#elif defined (SQLOS2) || defined(SQLWINT) || defined
        (SQLWIN) || defined(SQLDOS))
        Ts = (double)(g_struct->stream_end_time.time - g_struct-
>stream_start_time.time + 1);
        Ts1 = (double)g_struct->stream_start_time.time +
        ((double)g_struct->stream_start_time.millitm/1000);
        Ts2 = (double)g_struct->stream_end_time.time +
        ((double)g_struct->stream_end_time.millitm/1000);

#else
#error Unknown operating system
#endif

        /* TIME_ACC jen stop*/

        /* MARK
        ##Now do in calcmetrics.pl##
        QppD = (3600 * g_struct->scale_factor) /
        adjusted_g_mean;
        QthD = (num_stmt * 3600 * g_struct->scale_factor) / Ts;
        QphD = sqrt(QppD*QthD);
        */
        /* if the decimal part has some meaningful value then
        print the database size
        with decimal part; otherwise just print the integer part */

        fprintf (outstream,
        "\nGeometric mean interim value =
        %10.3f\n\nStream Ts %11 = %10.0f\n\nStream start int

```

```

representation %11 = %f\n\nStream stop int representation
%11 = %f",
        adjusted_g_mean_intern,Ts,Ts1,Ts2);
    }
}

/*****
*****/
/* free up all the elements of the sqlda after done processing
*/
/*****
*****/
void free_sqlda (struct sqlda *sqlda, int select_status) /*
@d30369 tjg */
{
    int loopvar;

    if (select_status == TPCDBATCH_SELECT)
        for (loopvar=0; loopvar<sqlda->sqlld; loopvar++) {
            free(sqlda->sqlvar[loopvar].sqldata);
            free(sqlda->sqlvar[loopvar].sqlind);
        }

    free(sqlda);
    sqlda_allocated = 0; /* fix free() problem on NT
        wlc 090597 */
}

/*****
*****/
/* processing to run the insert update function */
/*****
*****/
void runUF1 ( struct global_struct *g_struct, int updatePair )
{

    char statement[3000];
    char sourcedir[256];

    int split_updates = 2; /* no. of ways update records are
    split */
    int concurrent_inserts = 2; /* jenCI no of concurrent
    updates to be */
        /* jenCI run at once*/
    int loop_updates = 1; /* jenCI no of updates to be run
    in one */
        /* jenCI "concurrent" invocation.
    should*/
        /* jenCI be split_updates /
    concurrent_inserts*/
    int i;
    int streamNum;
#ifdef SQLWINT
    /* PROCESS_INFORMATION childprocess[100]; */
    char commandline[256];
    HANDLE su_hSem;
    char UF1_semaphore[256];
#else
    int childpid[100];
    int su_semaphore; /* semaphore for controlling split
    updates*/
    key_t su_semkey; /* key to generate semid */
#endif
    if (g_struct->c_l_opt->intStreamNum == 0)
        streamNum = 0;
    else
        streamNum = currentUpdatePair - updatePairStart + 1;
}

```

```

    fprintf( outstream,"UF1 for update pair %d, stream %d,
starting\n",updatePair, streamNum);

    /* Start by loading the data into the staging table at each
node */
    /* The orderkeys were split earlier by the split_updates
program */
    if (env_tpcd_audit_dir != NULL)
        strcpy(sourcedir,env_tpcd_audit_dir);
    else
        strcpy(sourcedir,".");

    /* Load the orderkeys into the staging table */
    /* In SMP environments one could use a load command but
by using a */
    /* script we can keep the code common */
#ifdef SQLWINT
    sprintf(statement,"perl %s\tools\ploaduf1 %d\n",
sourcedir, updatePair);
#else
    sprintf(statement,"perl %s/tools/ploaduf1 %d 1",
sourcedir, updatePair);
#endif
    if (system(statement))
    {
        fprintf(stderr,"ploaduf1 failed for UF1, examine
UF1.log for cause. Exiting.\n");
        if (verbose)
            fprintf(stderr,
                "ploaduf1 failed for UF1, examine UF1.log for
cause. Exiting.\n");
        exit(-1);
    }

    fprintf(outstream,"load_update finished for UF1.\n");

    if (getenv("TPCD_SPLIT_UPDATES") != NULL)
        split_updates = atoi (getenv
("TPCD_SPLIT_UPDATES"));
    if (getenv("TPCD_CONCURRENT_INSERTS") !=
NULL)
        /*jenCI*/
        concurrent_inserts = atoi (getenv
("TPCD_CONCURRENT_INSERTS")); /*jenCI*/
    loop_updates = split_updates / concurrent_inserts;
/*jenCI*/

#ifdef SQLWINT
    /* we will use the tpcd.setup file to generate the
semaphore key */
    if (getenv("TPCD_AUDIT_DIR") != NULL)
/*begin SEMA */
    {
        /* this is assuming that you will be running this from 0th
node */
        sprintf(sourcefile,"%s%ctools%ctpcd.setup",
            getenv("TPCD_AUDIT_DIR"),
            PATH_DELIM,PATH_DELIM);
    }
    else
    {
        fprintf(stderr,"runUF1 Can't open UF1 semaphore
file,TPCD_AUDIT_DIR is not defined.\n");
        exit(-1);
    }
/*end SEMA */
    su_semkey = ftok (sourcefile,'J');
    if ( (su_semid = semget (su_semkey, 1,
IPC_CREAT|S_IRUSR|S_IWUSR)) < 0)
    {

```

```

        fprintf(stderr,"Cannot get semaphore! semget failed:
errno = %d\n",errno);
        exit(-1);
    }
#else /* SQLWINT */
    sprintf (UF1_semaphore,"%s.%s.UF1.semfile",
env_tpcd_dbname, env_user);
    su_hSem = CreateSemaphore(NULL, 0,
        concurrent_inserts, /*jenCI*/
        (LPCTSTR)(UF1_semaphore));

    if (su_hSem == NULL)
    {
        fprintf(stderr,
            "CreateSemaphore (ready semaphore) failed,
GetLastError: %d, quitting\n",
            GetLastError());
        exit(-1);
    }
#endif /* SQLWINT */
    if (verbose) fprintf(stderr,"Semaphore created
successfully!\n");

    fclose(outstream); /* to prevent multiple header caused by
forking
        wlc 081397 */

    for (i=0; i < concurrent_inserts; i++)
/*jenCI*/
    {
#ifdef SQLWINT
        if ((childpid[i] = fork()) == 0)
        {
            /* runUF1_fn (updatePair, i); aph 981205 */
            runUF1_fn (updatePair, i, dbname, userid, passwd);
        }
        else
        {
            /* This is the parent */
            if (verbose)
                fprintf(stderr,"stream #%d started with pid %d\n", i,
childpid[i]);
        }
#else /* SQLWINT */
        sprintf (commandline,
            "start /b %s\auditruns\tpcdbatch.exe -z -d %s -i
%d -j 1 -k %d",
            env_tpcd_audit_dir, dbname, updatePair, i); /* aph
082797 */

        system (commandline);
#endif /* SQLWINT */
        sleep (UF1_SLEEP);
    }

    /* All children have been created, now wait for them to
finish */
#ifdef SQLWINT
    if (sem_op (su_semid, 0, concurrent_inserts * -1) != 0)
/*jenCI*/
    {
        /*jenSEM*/
        fprintf(stderr,
            "Failure to wait on insert semaphore with %d of
children\n",
            concurrent_inserts);
        exit(1);
    }
/*jenSEM*/
    semctl (su_semid, 0, IPC_RMID, 0);
#else
    for (i = 0; i < concurrent_inserts; i++)
/*jenCI*/

```



```

    {
        if (verbose)
        {
            fprintf(stderr, "About to wait again ...Sets to wait for
            %d\n",
                concurrent_inserts - i);          /*jenCI*/
        }
        if (WaitForSingleObject(su_hSem, INFINITE) ==
            WAIT_FAILED)
        {
            fprintf(stderr,
                "WaitForSingleObject (su_hSem) failed in
            runUF1 on set %d, error: %d, quitting\n",
                i, GetLastError());
            exit(-1);
        }
    }
    if (! CloseHandle(su_hSem))
    {
        fprintf(stderr,
            "RunUF1 Close Sem failed - Last Error: %d\n",
            GetLastError());
        /* no exit here */
    }
#endif

    if( (outstream = fopen(outstreamfilename,
        APPENDMODE)) == NULL )
    {
        fprintf(stderr, "\nThe output file could not be opened. ");
        fprintf(stderr, "Make sure that the filename is correct.\n");
        fprintf(stderr, "filename = %s\n", outstreamfilename);
        exit(-1);
    }

    fprintf(ostream, "UF1 for update pair %d
    complete\n", updatePair);
}

/* runUF1_fn() moved to another SQC file          aph
981205 */

/*****
/* processing to run the delete update function */
*****/
void runUF2 ( struct global_struct *g_struct, int updatePair )
{
    char statement[3000];
    char sourcedir[256];

    int split_deletes = 1; /* no. of ways update records are
    split @dxxxxxhar */
    int concurrent_deletes = 1; /* number of database
    partitions DELjen */
    int chunks_per_concurrent_delete = 1;

    int i;
    int streamNum;
#ifdef SQLWINT
    char commandline[256];
    HANDLE su_hSem;
    char UF2_semfile[256];
#else
    int childpid[100];
    char sourcefile[256];
    int su_semid; /* semaphore for controlling split
    updates*/
    key_t su_semkey; /* key to generate semid */

```

```

#endif
    if (g_struct->c_l_opt->intStreamNum == 0)
        streamNum = 0;
    else
        streamNum = currentUpdatePair - updatePairStart + 1;

    fprintf(ostream, "UF2 for update pair %d, stream %d,
    starting\n", updatePair, streamNum);

    /* We need to know both how many chunks there are and
    how many chunks*/
    /* are to be executed by each concurrent UF2 process.
    More chunks means */
    /* both smaller transactions (less deadlock) and more
    potential concurrency */

    /* How many "chunks" have the orderkeys been divided
    into? */
    if (getenv("TPCD_SPLIT_DELETES") != NULL)
        split_deletes = atoi (getenv
        ("TPCD_SPLIT_DELETES"));
    /* How many deletes should run concurrently */
    if (getenv("TPCD_CONCURRENT_DELETES") !=
        NULL)
        concurrent_deletes = atoi (getenv
        ("TPCD_CONCURRENT_DELETES"));
    /* How many chunks in each concurrently running delete
    process */
    chunks_per_concurrent_delete = split_deletes /
    concurrent_deletes;

    /* Start by loading the data into the staging table at each
    node */
    /* The orderkeys were split earlier by the split_updates
    program */
    if (env_tpcd_audit_dir != NULL)
        strcpy(sourcedir, env_tpcd_audit_dir);
    else
        strcpy(sourcedir, ".");

    /* Load the orderkeys into the staging table */
    /* In SMP environments one could use a load command but
    by using a */
    /* script we can keep the code common */

#ifdef SQLWINT
    sprintf (statement, "perl %s\\tools\\ploaduf2 %d\n",
        sourcedir, updatePair);
#else
    sprintf (statement, "perl %s/tools/ploaduf2 %d 2",
        sourcedir, updatePair);
#endif
    if (system(statement))
    {
        fprintf (stderr, "ploaduf2 failed for UF2, examine
        UF2.log for cause. Exiting.\n");
        exit (-1);
    }
    fprintf (ostream, "ploaduf2 finished for UF2.\n");

    fclose(outstream); /* to prevent multiple header caused by
    forking

    wlc 081397 */

    /* Next we need to get ready to launch a bunch of
    concurrent processes */
#ifdef SQLWINT

```

```

/* we will use the tpcd.setup file to generate the
semaphore key begin SEMA */
if (getenv("TPCD_AUDIT_DIR") != NULL)
{
    sprintf(sourcefile, "%s%ctools%ctpcd.setup",
        getenv("TPCD_AUDIT_DIR"), PATH_DELIM,
        PATH_DELIM);
}
else
{
    fprintf(stderr, "runUF2 Can't open UF2 semaphore file,
TPCD_AUDIT_DIR is not defined.\n");
    exit (-1);
}

su_semkey = ftok (sourcefile, 'D'); /* use D for deletes
*/
/* end SEMA */
if ( (su_semid = semget (su_semkey, 1,
IPC_CREAT|S_IRUSR|S_IWUSR)) < 0)
{
    fprintf (stderr, "UF2 Can't get semaphore! semget failed:
erno = %d\n",
        errno);
    exit (-1);
}
#else
    sprintf (UF2_semfile, "%s.%s.UF2.semfile",
env_tpcd_dbname, env_user);
    fprintf(stderr, "UF2 semfile = %s\n", UF2_semfile);
    su_hSem = CreateSemaphore(NULL, 0,
        concurrent_deletes,
        (LPCTSTR)(UF2_semfile));
    if (su_hSem == NULL)
    {
        fprintf(stderr,
            "CreateSemaphore (ready semaphore) failed,
GetLastError: %d, quitting\n",
            GetLastError());
        exit(-1);
    }
    fprintf(stderr, "Semaphore created successfully!\n");
#endif

    for (i=0; i < concurrent_deletes; i++)
    {
#ifdef SQLWINT
        if ((childpid[i] = fork()) == 0)
        {
            fprintf(stderr, "B-Calling runUF2_fn %d %d %d
...n",
                updatePair,
                i, chunks_per_concurrent_delete);
            /* runUF2_fn (updatePair, i,
            chunks_per_concurrent_delete); aph 981205 */
            runUF2_fn (updatePair, i,
            chunks_per_concurrent_delete, dbname, userid, passwd);
        }
        else
        {
            /* This is the parent */
            if (verbose)
                fprintf (stderr, "stream #%d started with pid %d\n", i,
                    childpid[i]);
        }
    }
#else
    {
        /* SECURITY_ATTRIBUTES sec_process;
        SECURITY_ATTRIBUTES sec_thread; */
        /* NEED TO FIX THIS UP - KBS 98/10/20 */

```

```

        sprintf (commandline,
            "start /b %s\\auditruns\\tpcdbatch.exe -z -d %s -i %d
-j 2 -k %d -x %d",
            env_tpcd_audit_dir, dbname, updatePair, i,
            chunks_per_concurrent_delete ); /* aph */
        /* the -x parm should be passed at 0...not 100% sure of
this jen */
        fprintf(stderr, "commandline= %s\n", commandline);
        system (commandline);
        sleep (UF2_SLEEP);
    }
#endif

/* All children have been created, now wait for them to
finish */
#ifdef SQLWINT
    fprintf(stderr, "About to wait on the semaphore...\n");
    if (sem_op (su_semid, 0, concurrent_deletes * -1) != 0)
/*jenSEM*/
    {
        /*jenSEM*/
        fprintf(stderr,
            "Failure to update wait on delete semaphore with
%d children\n",
            concurrent_deletes);
        exit(1);
    }
    semctl (su_semid, 0, IPC_RMID, 0);
#else
    // for (i = 0; i < split_deletes; i++) //DJD Waits
    forever.....
    for (i = 0; i < concurrent_deletes; i++)
    {
        if (verbose)
        {
            fprintf(stderr, "About to wait again ...Sets to wait for
%d\n",
                split_deletes - i);
            fprintf(stderr, "About to wait again ...Sets to wait for
%d\n",
                concurrent_deletes - i);
        }
        if (WaitForSingleObject(su_hSem, INFINITE) ==
WAIT_FAILED)
        {
            fprintf(stderr,
                "WaitForSingleObject (su_hSem) failed on set
%d, error: %d, quitting\n",
                i, GetLastError());
            exit(-1);
        }
    }
    if (! CloseHandle(su_hSem))
    {
        fprintf(stderr, "Close Sem failed - Last Error: %d\n",
            GetLastError());
        /* no exit here */
    }
#endif

if( (outstream = fopen(outstreamfilename,
APPENDMODE)) == NULL )
{
    fprintf(stderr, "\nThe output file could not be opened. ");
    fprintf(stderr, "Make sure that the filename is correct.\n");
    fprintf(stderr, "filename = %s\n", outstreamfilename);
    exit(-1);
}

```

```

        fprintf( outstream,"UF2 for update pair %d
        complete\n",updatePair);

    }

/* runUF2_fn() moved to another SQC file          aph
981205 */

/*-----*/
/*      General semaphore function.              */
/*-----*/
#ifdef SQLWINT
int sem_op (int semid, int semnum, int value)
{
    struct sembuf sembuf; /* = {semnum ,value,0}; */
    sembuf.sem_num = semnum;
    sembuf.sem_op = value;
    sembuf.sem_flg = 0;

    if (semop(semid,&sembuf,1) < 0)
    {
        fprintf(stderr,"ERROR*** sem_op errorno = %d\n",
        errno);
        return(-1);
        /* exit(1); */
    }
    return (0); /* successful return  jenSEM */
}
#endif

/******
*****/
/* Determines the proper name for the output file to
   be generated for a particular TPG-D query, update function,
   or
   interval summary */
/******
*****/
void output_file(struct global_struct *g_struct)
{
    char file_name[256] = "\0";
    char run_dir[150]  = "\0";
    char time_stamp[50] = "\0";
    char delim[2]      = "\0";
    int qnum;

    strcpy(run_dir,g_struct->run_dir);
    sprintf(delim,"%s",env_tpcd_path_delim);
    strcpy(time_stamp,g_struct->file_time_stamp);

    if (g_struct->stream_list == NULL)
        if ((g_struct->stream_list =
            fopen(g_struct->c_l_opt->str_file_name,
            READMODE)) == NULL)
        {
            fprintf(stderr,"\nThe stream list file could not be
            opened.");
            fprintf(stderr,"Make sure that the filename is
            correct.\n");
            exit(-1);
        }

    fscanf(g_struct->stream_list,"%d",&qnum);

    switch (g_struct->c_l_opt->intStreamNum)
    {
        case -1: /* qualifying */

```

```

        sprintf(file_name,
        "%s%sqryqual%02d.%s",run_dir,delim,qnum,time_stamp);
        break;
        case 0: /* power tests */
            if (qnum < 0) /* update functions */
                sprintf(file_name,
                "%s%smps00uf%d.%02d.%s",run_dir,delim,abs(qnum), \
                currentUpdatePair,time_stamp);
            else
                sprintf(file_name,
                "%s%smpqry%02d.%s",run_dir,delim,qnum,time_stamp);
            break;

        default:
            /* if (qnum < 0) - replaced by berni 96/03/26 */
            if (g_struct->c_l_opt->update == 2 ||
                g_struct->c_l_opt->update == 5)
                sprintf(file_name,
                "%s%smts%02duf%d.%02d.%s",run_dir,delim, \
                currentUpdatePair - updatePairStart +
                1,abs(qnum), currentUpdatePair,time_stamp);
            else
                sprintf(file_name,
                "%s%smts%02dqry%02d.%s",run_dir,delim, \
                g_struct->c_l_opt-
                >intStreamNum,qnum,time_stamp);
            break;
    }

    if (g_struct->c_flags->eo_infile)
        if (g_struct->c_l_opt->update == 2 ||
            g_struct->c_l_opt->update == 5)
            sprintf(file_name,
            "%s%smtufinter.%s",run_dir,delim,time_stamp);
        else
            switch (g_struct->c_l_opt->intStreamNum) {
                case -1:
                    sprintf(file_name,
                    "%s%sqryqualinter.%s",run_dir,delim,time_stamp);
                    break;
                case 0:
                    /*sprintf(file_name,
                    "%s%smpinter.%s",run_dir,delim,time_stamp);*/
                    if (g_struct->c_l_opt->update == 1)
                        sprintf(file_name,
                        "%s%smpqinter.%s",run_dir,delim,time_stamp);
                    else
                        sprintf(file_name,
                        "%s%smpufinter.%s",run_dir,delim,time_stamp);
                    break;
                default:
                    if (g_struct->c_l_opt->intStreamNum > 0)
                        sprintf(file_name,
                        "%s%smts%dinter.%s",
                        run_dir,delim,g_struct->c_l_opt-
                        >intStreamNum,time_stamp);
                    else
                        fprintf(stderr,"Invalid stream number specified\n");
                    break;
            }

    strcpy(outstreamfilename, file_name); /* wlc 081397 */

    if (!feof(instream) || g_struct->c_flags->eo_infile)
        /* Only create an output file if there are input
        statements left to process, or if we're all done
        and want to print out the summary table file */
        if ( (outstream = fopen(file_name, WRITEMODE)) ==
        NULL ) {

```

```

        fprintf(stderr, "\nThe output file could not be opened.
");
        fprintf(stderr, "Make sure that the filename is
correct.\n");
        fprintf(stderr, "filename = %s\n", file_name);
        exit(-1);
    }

    return;
}

/*****
*****/
/* Determine whether or not we should break out of the block
loop
because of an end of file, end of block, or update function.
Also handle some semaphore stuff for update functions
*/
/*****
*****/
int PreSQLprocess(struct global_struct *g_struct,
Timer_struct *start_time)
{
    int        rc = 1;
    FILE        *updateFP;
#ifdef SQLWINT
    int        semid;        /* semaphore for controlling
UFs*/
    key_t        semkey;        /* key to generate semid */
#else
    int        SemTimeout = 600000; /* Des time out
period of 1 minute */
#endif

    switch (g_struct->c_flags->select_status)
    {
        case TPCDBATCH_NONSQL:
            g_struct->s_info_stop_ptr = g_struct->s_info_ptr;
            /* if we're at the end of the input file, set the stop
pointer to this structure */
            rc = FALSE;
            break;
        case TPCDBATCH_EOBLOCK:
            rc = FALSE;
            break;
        case TPCDBATCH_INSERT:
            /* we have to check whether or not this is a throughput */
            /* test, and if it is, we have to set up a semaphore to */
            /* control when the update functions are run. We want
*/
            /* them to be run after all the query streams have
finished. */
            /* What we do is set up the semaphore here, decrement it
*/
            /* in the query streams, and wait for it to get cleared */
            /* before we allow the UFs to run. */
            /* Note: we only set up the semaphore if: */
            /* 1. we are running the throughput test (num of */
            /* streams > 0) */
            /* 2. we are at the first UF1 (i.e. this is the */
            /* case where currentUpdatePair = updatePairStart
*/
            /* we also want to check the sem_on element in the
global */
            /* structure to see if we want to use semaphores or let */
            /* the calling script do the synchronization of the update
*/
            /* stream */
            if ( semcontrol == 1 )

```

```

    {
        /* yes we are to be using semaphores */
        /* is this the 1st time into update function 1 (uf1)? */
        if (currentUpdatePair == updatePairStart )
        {
            /* create the semaphores */
            create_semaphores(g_struct);
            if (g_struct->c_l_opt->intStreamNum != 0)
                /* wait period for runthroughput updates */
                throughput_wait(g_struct);
        }
        /* otherwise continue to run*/
    }
    if ((g_struct->c_l_opt->update == 3) || (g_struct->
c_l_opt->update == 4))
    {
        get_start_time(start_time);
        strcpy(g_struct->s_info_ptr->start_stamp,
            get_time_stamp(T_STAMP_FORM_3, start_time));
        /* TIME_ACC jen*/
        /* write the start timestamp to the file...if this is not a
qualification */
        /* run, then write the seed used as well */
        fprintf( outstream, "Start timestamp %*. *s \n",
            T_STAMP_3LEN, T_STAMP_3LEN,
            /* TIME_ACC jen*/
            g_struct->s_info_ptr->start_stamp);
        if (g_struct->c_l_opt->intStreamNum >= 0)
        {
            if (g_struct->lSeed == -1)
            {
                fprintf( outstream, "Using default qgen seed file");
            }
            else
                fprintf( outstream, "Seed used = %ld", g_struct->
lSeed);
            fprintf( outstream, "\n");
        }
        if (g_struct->c_l_opt->update < 4){
            /* run only if updates are enabled */
            runUF1(g_struct, currentUpdatePair);
        }

        rc = FALSE;
        if ((g_struct->c_l_opt->intStreamNum == 0) &&
(semcontrol == 1))
            /* RUNPOWER: release first semaphore so the queries
can run */
            release_semaphore(g_struct, INSERT_POWER_SEM);
        break;
        case TPCDBATCH_DELETE:
            if ((g_struct->c_l_opt->intStreamNum == 0) &&
(semcontrol == 1))
            {
                /* RUNPOWER: wait for queries to finish */
                /* waiting on QUERY_POWER_SEM semaphore */
                runpower_wait(g_struct, QUERY_POWER_SEM);
            }
            if ((g_struct->c_l_opt->update == 3) || (g_struct->
c_l_opt->update == 4))
            {
                get_start_time(start_time);
                strcpy(g_struct->s_info_ptr->start_stamp,
                    get_time_stamp(T_STAMP_FORM_3, start_time));
                /* TIME_ACC jen*/
                /* write the start timestamp to the file...if this is not a
qualification */
                /* run, then write the seed used as well */
                fprintf( outstream, "Start timestamp %*. *s \n",

```

```

        T_STAMP_3LEN,T_STAMP_3LEN,
/* TIME_ACC jen*/
        g_struct->s_info_ptr->start_stamp);
if (g_struct->c_l_opt->intStreamNum >= 0)
{
    if (g_struct->lSeed == -1)
    {
        fprintf( outstream,"Using default qgen seed file");
    }
    else
        fprintf( outstream,"Seed used = %ld",g_struct-
>lSeed);
    fprintf( outstream,"\n");
}
if (g_struct->c_l_opt->update < 4){
/* run only if updates are enabled */
    runUF2(g_struct, currentUpdatePair);
    if (g_struct->c_l_opt->intStreamNum == 0)
    { /* RUNPOWER */
        fprintf(stderr, "UF2 completed\n");
    }
}
currentUpdatePair += 1;
/* update the update.pair.num file to reflect the
successfully completed */
/* update pair */
if (g_struct->c_l_opt->update < 4)
{ /*jen*/
#ifdef NO_INCREMENT
    /* don't update the pair, only for my testing - Haider */
    updateFP = fopen(g_struct->update_num_file,"w");
    fprintf(updateFP,"%d\n",currentUpdatePair);
    fclose(updateFP);
#endif
} /*jen*/
rc = FALSE;
break;

}
return(rc);
}

/*****
*****/
/* Handles actual processing of SQL statement.  Initializes
the SQLDA
    for returned rows, does PREPARE, DECLARE, and OPEN
statements and
    executed multiple FETCHes as needed.  If not a SELECT
statement,
    goes into EXECUTE IMMEDIATE section
*/
/*****
*****/
void SQLprocess(struct global_struct *g_struct)
{
    int rc = 0; /* 912RETRY */
    int rows_fetch = 0;
    long sqlcode = SQL_RC_E911; /* Temporary
sqlcode to test
                                for deadlocks */
    int max_wait = 1; /* Maximum number of
retries
                                for deadlock scenario */
    int col_lengths[TPCDBATCH_MAX_COLS]; /* array
containing widths of
                                columns in returned set */

```

```

    struct stmt_info *s_info_ptr;

    s_info_ptr = g_struct->s_info_ptr;
/*****
*****/
/* grab storage for the SQLDA */
/*****
*****/
    if ((sqlda=(struct sqlda *)malloc(SQLDASIZE(100))) ==
NULL)
        mem_error("allocating sqlda");

    sqlda->sqln = TPCDBATCH_MAX_COLS;
/* @d30369 tjj */

/* Error-recovery code for errors resulting from multi-
stream errors */

    while (((sqlcode == SQL_RC_E911) ||
            (sqlcode == SQL_RC_E912) ||
            (sqlcode == SQL_RC_E901)) &&
            (max_wait < MAXWAIT) &&
            (rc==0) )
    {

        sqlcode = 0; /* Re-initialize sqlcode to avoid
infinite-loop */
        if (g_struct->c_flags->select_status ==
TPCDBATCH_SELECT)
        {
            /* Enter this loop if SQL stmt is a SELECT */
            EXEC SQL PREPARE STMT1 INTO :*sqlda FROM
:stmt_str;

            sqlcode = error_check();
            if (sqlcode < 0)
            {
                fprintf (stderr,"nPrepare failed. Stopping this
query.n");
                rc = -1;
            }
            else /* print out the column headings for the answer set
*/
            {
                print_headings(sqlda,col_lengths); /*
@d22817 tjj */

                allocate_sqlda(sqlda); /* This is where we set
storage for the */
                /* SQLDA based on the column
types in */
                /* the answer set table. */

                EXEC SQL DECLARE DYNCUR CURSOR FOR
STMT1;

                EXEC SQL OPEN DYNCUR;
                sqlcode = error_check();

                if (sqlcode < 0) /* we ran into an error of some
kind KBS 98/09/28 */
                {
                    max_wait ++;
                    fprintf (stderr, "nAn error has been detected on
open...Retrying...n");
                    SleepSome(10);
                }
                else
                {

```

```

/*****
*****/

/* Fetch appropriate number of rows and determine
whether or not to */
/* send them to file.
*/

/*****
*****/

rows_fetch = 0;

do
{
/* Keep fetching as long as we haven't finished
reading
all the rows and we haven't gone past the limits
set
in the control string */

EXEC SQL FETCH DYNCUR USING
DESCRIPTOR :*sqlda;
if (sqlca.sqlcode == 100)
{
sqlcode = sqlca.sqlcode;
}
else
{
sqlcode = error_check();
}
if (sqlcode == 0)
{
rows_fetch++;
if ( (rows_fetch <= s_info_ptr->max_rows_out)
||
(s_info_ptr->max_rows_out == -1) )
echo_sqlda(sqlda,col_lengths);
}
else if (sqlcode < 0)
{
max_wait++;
fprintf(stderr, "\nAn error has been detected on
fetch...Retrying...\n");
SleepSome(10);
}
} while ( (sqlcode == 0) && \
(s_info_ptr->max_rows_fetch == -1) || \
(rows_fetch < s_info_ptr-
>max_rows_fetch) );
} /* end of successful open */
} /* end of successful prepare */
} /** End of block for handling SELECT statements **/

else
{
/** SQL statement is not a SELECT **/
EXEC SQL EXECUTE IMMEDIATE :stmt_str;
sqlcode = error_check();

if (sqlcode < 0 )
{
max_wait ++;
fprintf(stderr, "\nAn error has been detected on
execute immediate...Retrying...\n");
SleepSome(10);
}
} /* end of block for handling NON-select statements */

if ( (sqlcode >= 0 ) &&

```

```

(g_struct->c_flags->select_status ==
TPCDBATCH_SELECT))
{
/* we opened a cursor before */
EXEC SQL CLOSE DYNCUR;
sqlcode = error_check();

if ((s_info_ptr->max_rows_fetch == -1) ||
(rows_fetch < s_info_ptr->max_rows_fetch))
#ifdef SQLPTX
fprintf (outstream, "\n\nNumber of rows retrieved is:
%6d",
rows_fetch);
else
fprintf (outstream, "\n\nNumber of rows retrieved is:
%6d",
s_info_ptr->max_rows_fetch);
#else
fprintf (outstream, "\n\nNumber of rows retrieved is:
%6d",
rows_fetch);
else
fprintf (outstream, "\n\nNumber of rows retrieved is:
%6d",
s_info_ptr->max_rows_fetch);
#endif
} /* @d28763 tjc */

if (s_info_ptr->query_block == FALSE) /* if block is off
don't loop */
g_struct->c_flags->eo_block = TRUE;

} /* end of while loop to retry if needed */

} /* end of SQLprocess */

/*****
*****/
/* performs some operations after a statement has been
processed,
including doing a COMMIT if necessary, and calculating
the
elapsed time. Also initializes a new stmt_info structure
for the next block of statements */
/*****
*****/
int PostSQLprocess(struct global_struct *g_struct,
Timer_struct *start_time)
{
struct stmt_info *s_info_ptr;
Timer_struct end_t; /* end point for elapsed time
*/

#ifdef DEBUG
fprintf (outstream, "In PostSQLprocess\n");
#endif

s_info_ptr = g_struct->s_info_ptr;

if (g_struct->c_flags->select_status ==
TPCDBATCH_NONSQL)
return FALSE; /* get out if we've reached the end of
input file */

if (g_struct->c_l_opt->update > 1)
{
/* This is an update function stream. There is no need to
COMMIT. */
/* Each UF child will COMMIT its own transactions. */

```

```

    ;
}
else
{ /* For non-UF cases, COMMIT now. */
  if (g_struct->c_l_opt->a_commit) {
    EXEC SQL COMMIT WORK;
    error_check(); /* @d22275 tjg
  }
}

fflush(outstream);

s_info_ptr->elapsed_time = get_elapsed_time(start_time);

if (g_struct->c_flags->time_stamp == TRUE) /*
@d25594 tjg */
  get_start_time(&end_t); /* Get the end time */
  strcpy(s_info_ptr->end_stamp,
    get_time_stamp(T_STAMP_FORM_3,&end_t));
  /*get_time_stamp(T_STAMP_FORM_3,(time_t)NULL)
);*/

/* BBE: Pass on time stamp values for the next query */
temp_time_struct = end_t;
strcpy(temp_time_stamp, s_info_ptr->end_stamp);

/* write the start timestamp t o the file */
fprintf( outstream,"n\nStop timestamp %*.*s\n",
  T_STAMP_3LEN,T_STAMP_3LEN, /*
TIME_ACC jen*/
  s_info_ptr->end_stamp);

/* DJD print elapsed time in seconds */
fprintf( outstream,"Query Time = %15.1f secs\n",
s_info_ptr->elapsed_time);

/** Allocate space for a new stmt_info structure **/ /*
@d24993 tjg */
s_info_ptr->next =
  (struct stmt_info *) malloc(sizeof(struct stmt_info));
if (s_info_ptr->next != NULL) {
  memset(s_info_ptr->next, '0', sizeof(struct stmt_info));
  /** Transfer details from one structure to another for
  to apply for the next statement **/
  s_info_ptr->next->stmt_num = s_info_ptr->stmt_num +
1;
  s_info_ptr->next->max_rows_fetch = s_info_ptr-
>max_rows_fetch;
  s_info_ptr->next->max_rows_out = s_info_ptr-
>max_rows_out;

  s_info_ptr->next->query_block = s_info_ptr-
>query_block;
  s_info_ptr->next->elapsed_time = -1;

  s_info_ptr = s_info_ptr->next;
}
else {
  mem_error("allocating next stmt structure. Exiting\n");
  exit(-1);
}

/** Set the stop and travelling pointer to the current info
structure **/
g_struct->s_info_stop_ptr = g_struct->s_info_ptr =
s_info_ptr;

```

```

if (sqllda_allocated)
  free_sqllda(sqllda,g_struct->c_flags->select_status);
/* fix free() problem on NT
wlc 090597 */

if (g_struct->c_l_opt->outfile != 0)
  fclose(outstream);

return (TRUE);
}

/*****
*****
***** Does some cleaning up once all the statements are
processed. Disconnects
from the database, cleans up some semaphore stuff from
the update functions,
prints out the summary table, and closes all file handles.
*/
*****
*****
int cleanup(struct global_struct *g_struct)
{
  #ifndef SQLWINT
    int semid; /* semaphore for controlling
UFs*/
    key_t semkey; /* key to generate semid */
  #endif
  char file_name[256] = "\0";

  /** End timestamp for stream */
  /*g_struct->stream_end_time = time(NULL);*/
  get_start_time(&(g_struct->stream_end_time)); /*
TIME_ACC jen */

  switch (g_struct->c_l_opt->update)
  {
    case (2):
    case (5):
      /* update throughput function stream */
      sprintf(file_name,"%s%sstrcntf.%s",g_struct-
>run_dir,
        env_tpcd_path_delim, g_struct-
>file_time_stamp);
      break;
    case (3):
    case (4):
      /* update power function stream */
      sprintf(file_name,"%s%spsprcntuf.%s",g_struct-
>run_dir,
        env_tpcd_path_delim, g_struct-
>file_time_stamp);
      break;
    case (1):
      /* power query stream */
      sprintf(file_name,"%s%spsprcnt%d.%s",g_struct-
>run_dir, env_tpcd_path_delim,
        g_struct->c_l_opt->intStreamNum,g_struct-
>file_time_stamp);
      break;
    case (0):
      /* throughput query stream */
      sprintf(file_name,"%s%sstrcnt%d.%s",g_struct-
>run_dir, env_tpcd_path_delim,
        g_struct->c_l_opt->intStreamNum,g_struct-
>file_time_stamp);
      break;
  }

  #ifndef LINUX

```

```

    if( (g_struct->stream_report_file = fopen(file_name,
APPENDMODE)) == NULL )
    {
        fprintf(stderr, "\nThe output file for the stream count
information\n");
        fprintf(stderr, "could not be opened, make sure t he
filename is correct\n");
        fprintf(stderr, "filename = %s\n", file_name);
        exit(-1);
    }
#endif

/* print out the stream stop time in the stream count
information file*/
if (g_struct->c_l_opt->update > 1)
{
    /* update function stream */
    fprintf(g_struct->stream_report_file,
"Update function stream stopping at %*.*s\n",
T_STAMP_3LEN, T_STAMP_3LEN, /*
TIME_ACC jen*/
get_time_stamp(T_STAMP_FORM_3, &(g_struct-
>stream_end_time))); /* TIME_ACC jen*/
}
else
{
    /* query stream(s) */
    fprintf(g_struct->stream_report_file,
"Stream number %d stopping at %*.*s\n",
g_struct->c_l_opt->intStreamNum,
T_STAMP_3LEN, T_STAMP_3LEN, /*
TIME_ACC jen*/
get_time_stamp(T_STAMP_FORM_3, &(g_struct-
>stream_end_time))); /* TIME_ACC jen*/
}
fclose(g_struct->stream_report_file);

/* No need to check for errors here.
Also, the UF stream in a Throughput run
has no connection in tpcdbatch.sqc.      aph 98/12/26
error_check();
*/

/* if we are in a query stream AND this is a throughput test,
then need */
/* do to some semaphore stuff (0 implies update functions
are off) */
/* AND we are supposed to be using semaphores */

if ( ( semcontrol == 1 ) &&
( g_struct->c_l_opt->update < 2))
/* only queries need to release the semaphore at this point
*/
{
    if (g_struct->c_l_opt->intStreamNum == 0)
        release_semaphore(g_struct, QUERY_POWER_SEM);
/* power stream */
    else
        release_semaphore(g_struct, THROUGHPUT_SEM); /*
throughput stream */

    EXEC SQL CONNECT RESET;

#ifdef SQLWINT
    if (verbose)
    {

```

```

        fprintf(stderr,
"cleanup: semkey = %ld, semid = %d, file = %s,
stream = %d\n",
semkey, semid, g_struct->update_num_file,
g_struct->c_l_opt->intStreamNum);
    }
#endif
}

/* Summary table processing */
@d24993 tlg /*
summary_table(g_struct);

fprintf (outstream, "\n\n");

fclose(outstream); /* Close the output data stream.
*/
fclose(instream); /* Close the SQL input stream.
*/

return (TRUE);
}

void create_semaphores(struct global_struct *g_struct)
{
#ifdef SQLWINT
    int semid; /* semaphore for controlling
UFs*/
    key_t semkey; /* key to generate semid */
#else
    HANDLE hSem;
    HANDLE hSem2;
    int SemTimeout = 600000; /* Des time out
period of 1 minute */
#endif
    fprintf(stderr, "numstreams = %d\n", g_struct->c_l_opt-
>intStreamNum);
    fprintf(stderr, "Update stream creating semaphore(s) for
update and query sequencing\n");
#ifdef SQLWINT
    fprintf(stderr, "semfile = %s\n", g_struct->sem_file);
    if (g_struct->c_l_opt->intStreamNum == 0)
        /*RUNPOWER*/
        {
            fprintf(stderr, "semfile2 = %s\n", g_struct-
>sem_file2);
            hSem = CreateSemaphore(NULL,
0, 1, (LPCTSTR)(g_struct->sem_file));
            hSem2 = CreateSemaphore(NULL,
0, 1, (LPCTSTR)(g_struct->sem_file2));
            if ((hSem == NULL) || (hSem2 == NULL))
            {
                fprintf(stderr,
"CreateSemaphores (ready semaphore)
failed, GetLastError: %d, quitting\n",
GetLastError());
                exit(-1);
            }
            fprintf(stderr, "Semaphores created
successfully!\n");
        }
    else
    {
        /* RUNTHROUGHPUT creates semaphores based on
the number of query streams while the number of streams for
runpower is constant */
        hSem = CreateSemaphore(NULL, 0,

```



```

        g_struct->c_l_opt->intStreamNum,
        (LPCTSTR)(g_struct->sem_file));

    if (hSem == NULL)
    {
        fprintf(stderr,
            "CreateSemaphore (ready semaphore)
failed, GetLastError: %d, quitting\n",
            GetLastError());
        exit(-1);
    }
    fprintf(stderr, "Semaphore created successfully!\n");
}

#else /* AIX, SUN, etc. */
/* create a semaphore key...use the name of a file that */
/* you know exists */
fprintf(stderr, "semfile = %s\n", g_struct-
>update_num_file);
semkey = ftok(g_struct->update_num_file, 'J');
if (g_struct->c_l_opt->intStreamNum == 0)
/* RUNPOWER */
{

    if ( (semid =
semget(semkey, 2, IPC_CREAT | S_IRUSR | S_IWUSR)) < 0)
    {
        fprintf(stderr,
            "Throughput can't get initial semaphore!
semget failed errno = %d\n",
            errno);
        exit(1);
    }
}
else
/* THROUGHPUT */
{

    if ( (semid =
semget(semkey, 1, IPC_CREAT | S_IRUSR | S_IWUSR)) < 0)
    {
        fprintf(stderr,
            "Throughput can't get initial semaphore!
semget failed errno = %d\n",
            errno);
        exit(1);
    }
    if (verbose)
    {
        fprintf(stderr,
            "insert: semkey = %ld, semid = %d, file
= %s, value = %d\n",
            semkey, semid, g_struct -
>update_num_file,
            (g_struct->c_l_opt->intStreamNum * -
1));
    }
}

#endif

/*throughput update */
void throughput_wait(struct global_struct *g_struct)
{
#ifdef SQLWINT
    int        semid;        /* semaphore for controlling
UFs*/
    key_t      semkey;        /* key to generate semid */

```

```

#else
    HANDLE      hSem;
    int         j;
    int         SemTimeout = 600000; /* Des time out
period of 1 minute */
#endif

#ifdef SQLWINT
    hSem = open_semaphore(g_struct,
THROUGHPUT_SEM);
    for (j = 0; j < g_struct->c_l_opt->intStreamNum; j++)
    {
        if (verbose)
            fprintf(stderr, "About to wait again ...\n");
        if (WaitForSingleObject(hSem, INFINITE) ==
WAIT_FAILED)
        {
            fprintf(stderr,
                "WaitForSingleObject (hSem) failed on
stream %d, error: %d, quitting\n",
                j, GetLastError());
            exit(-1);
        }
        if (verbose)
            fprintf(stderr, "Streams to wait for %d\n", j);
    }
    fprintf(stderr, "finished waiting on stream semaphore!
Ready to run updates!\n");
    /* close the semaphore handle */
    if (! CloseHandle(hSem)) {
        fprintf(stderr, "Close Sem failed - Last Error: %d\n",
GetLastError());
        /* no exit here */
    }
#else
    semid = open_semaphore(g_struct);
    /* call the sem_op routine to decrement the semaphore
by */
    /* however many streams .... by calling this function
with*/
    /* a negative number, this stream is forced to wait until
*/
    /* the semaphore gets back to 0 */
    if (sem_op(semid, 0, (g_struct->c_l_opt-
>intStreamNum * -1)) != 0)
    {
        /*jenSEM*/
        fprintf(stderr,
            "Failure to wait on throughput semaphore for
%d streams\n",
            g_struct->c_l_opt->intStreamNum);
        exit(1);
    }
    /*jenSEM*/
    fprintf(stderr, "finished waiting on stream semaphore!
Ready to run updates!\n");
    semctl(semid, 0, IPC_RMID, 0); /* we've finished
waiting, now */
    /* remove the semaphore */
#endif
}

void runpower_wait(struct global_struct *g_struct, int
sem_num)
{
    char semfile[150];
#ifdef SQLWINT
    HANDLE hSem;

    if (sem_num == 1)
        strcpy (semfile, g_struct->sem_file);

```

```

else
    strcpy (semfile, g_struct->sem_file2);

#else /* AIX */
int      semid;          /* semaphore for controlling
UFs*/
key_t    semkey;         /* key to generate semid
*/

    strcpy (semfile, g_struct->update_num_file);
#endif

if (g_struct->c_l_opt->update == 1)
    fprintf(stderr, "querystream waiting for update stream
(UF1) to signal semaphore based on %s\n", semfile);
else
    fprintf(stderr, "updatestream (UF2) waiting on
querystream semaphore to signal semaphore based on %s\n",
semfile);

#ifdef SQLWINT

    hSem = open_semaphore(g_struct, sem_num);
    if (verbose)
        fprintf(stderr, "Runpower queries about to wait ...n");
    if (WaitForSingleObject(hSem, INFINITE) ==
WAIT_FAILED)
    {
        fprintf(stderr,
            "WaitForSingleObject (hSem) failed on stream 0,
error: %d, quittingn",
            GetLastError());
        exit(-1);
    }
    if (! CloseHandle(hSem))
    {
        fprintf(stderr, "Close Sem failed - Last Error: %dn",
GetLastError());
        /* no exit here */
    }
}

#else

    semid = open_semaphore(g_struct);

    /* call the sem_op routine to decrement the semaphore by
*/
    /* however many streams .... by calling this function
with*/
    /* a negative number, this stream is forced to wait until */
    /* the semaphore gets back to 0 */
    /* aix semaphores start at 0, not 1, so sem_num -1 is used
*/
    if (sem_op(semid, sem_num - 1, -1) != 0)
    {
        /*jenSEM*/
        fprintf(stderr,
            "Failure to wait on runpower semaphone for %d
streams\n",
            g_struct->c_l_opt->intStreamNum);
        exit(1);
    }
    /*jenSEM*/
#endif

if (g_struct->c_l_opt->update == 1)
    fprintf(stderr, "querystream finished waiting on
updatestream semaphore\n");
else
    fprintf(stderr, "updatestream finished waiting on
querystream semaphore\n");

```

```

}

void release_semaphore(struct global_struct *g_struct, int
sem_num)
{
#ifdef SQLWINT
    int      semid;          /* semaphore for controlling
UFs*/
    key_t    semkey;         /* key to generate semid */
#else
    HANDLE    hSem;
    int      SemTimeout = 600000; /* Des time out
period of 1 minute */
#endif

#ifdef SQLWINT
    hSem = open_semaphore(g_struct, sem_num); /* query
*/
    if (! ReleaseSemaphore(hSem,
        1,
        (LPLONG)(NULL)))
    {
        fprintf(stderr, "ReleaseSemaphore failed, Sem#: %d
LastError: %d, quit\n",
            sem_num, GetLastError());
        exit(-1);
    }
#else
    semid = open_semaphore(g_struct); /* query */
    /* aix semaphores start at 0, not 1, so sem_num -1 is
used */
    if (sem_op(semid, sem_num - 1, 1) != 0)
    /*jenSEM*/
    {
        /*jenSEM*/
        fprintf(stderr,
            "Failed to increment semaphore %d for
throughput stream %dn",
            sem_num, g_struct->c_l_opt-
>intStreamNum);
        fprintf(st derr,
            "file for generation of semaphore is: %s\n",
            g_struct->update_num_file);
        exit(1);
    }
}

#endif

if (g_struct->c_l_opt->intStreamNum == 0)
{ /* RUNPOWER */
    if (sem_num == 1)
    {
        fprintf(stderr, "UF1 completed.\n");
    }
    else
    {
        fprintf(stderr, "query stream completed.\n");
    }
}
}

#ifdef SQLWINT /* Compile only in NT */
HANDLE open_semaphore(struct global_struct *g_struct, int
num)
{
    HANDLE hSem;
    LPCTSTR semfile;

    if (num == 1)
        semfile = (LPCTSTR)g_struct->sem_file;
    else
        semfile = (LPCTSTR)g_struct->sem_file2;

```

```

        while ((hSem =
OpenSemaphore(SEMAPHORE_ALL_ACCESS |
                SEMAPHORE_MODIFY_STATE
|
                SYNCHRONIZE,
                TRUE,
                semfile))
        == (HANDLE)(NULL))
        {
            /*
            ** if cannot open the semaphore, wait for 0.1 second
            */
            fprintf(stderr, "Retry Open semaphore %s\n", semfile);

            Sleep(1000);
        }
        return hSem;
    }

#else /* Compile only in non-NT (i.e. AIX) */
int open_semaphore(struct global_struct *g_struct)
{
    int            semid;            /* semaphore for
controlling UFs*/
    key_t          semkey;          /* key to generate
semid */
    int num;

    if (g_struct->c_l_opt->intStreamNum == 0)
        num = 2;
    else
        num = 1;

    semkey = ftok(g_struct->update_num_file, 'J');
    while ((semid = semget(semkey, num, 0)) < 0)
    {
        if (errno == ENOENT)
        {
            sleep(2);
            fprintf(stderr, "cleanUp: looping for access to
semaphore stream %d ",
                    g_struct->c_l_opt->intStreamNum);
            fprintf(stderr, "semkey=%ld semid = %d
file=%s\n", semkey, semid,
                    g_struct->update_num_file);
        }
        else
        {
            fprintf(stderr, "query stream %d semget failed
errno = %d\n",
                    g_struct->c_l_opt-
>intStreamNum, errno);
            exit(1);
        }
    }
    return semid;
}
#endif

```

tpcdUF.sqc

```

/*****
*****
*
* TPCDUF.SQC
*

```

```

* Revision History:
*
* 05 dec 98 aph Created tpcdUF.sqc containing runUF1_fn()
and runUF2_fn()
* so that it can be bound separately with a different
isolation level.
* 15 may 99 bbe Added cast (short) for type conversion
between a long and a short.
* 16 jun 99 jen Added in proper connect reset code for UF
functions (mistakenly
* removed
* 17 jun 99 jen SEMA Changes semaphore file for update
functions to look for tpcd.setup
* not for the orders.*** update data file (AIX only
)
* 21 jul 99 bbe Commented out conditions in SQL statments
that searched on fields
* other than app_id.
*
*****
*****/

#define UF1DEBUG
#define UF2DEBUG

#ifndef SQLPTX
#define exit(rc) exit(rc)
#else
#define exit(rc) _exit(rc)
#endif /* SLQPTX */

#include "tpcdbatch.h"
/** EXEC SQL INCLUDE SQLCA; */

#include "sqlca.h"
extern struct sqlca sqlca;

/*****
*****/
/* Function Prototypes */
/*****
*****/

extern int SleepSome( int amount );
extern long error_check(void);
/*
@d28763 tjj */
extern void dumpCa(struct sqlca*); /*kmw*/
extern int sem_op (int semid, int semnum, int value);
extern char *get_time_stamp(int form, Timer_struct
*timer_pointer); /* TIME_ACC jen */

/*****
*****/
/* Declare the SQL host variables. */
/*****
*****/

EXEC SQL BEGIN DECLARE SECTION;
char UF_dbname[9] = "\0";
char UF_userid[9] = "\0";
char UF_passwd[9] = "\0";
sqlint32 UF_chunk = 0;
short month = 0;
EXEC SQL END DECLARE SECTION;

/*****
*****/
/* Declare the global variables. */
/*****
*****/

extern char env_tpcd_tmp_dir[150];
extern FILE *instream, *outstream; /* File pointers */

```

```

extern char sourcefile[256]; /* Used for semaphores and
table functions?*/
extern struct {
    short len;
    char data[32700];
} stmt_str; /* jen LONG */

/*****
*****/
/* UF1 child */
/* (i is the application number.) */
/*****
*****/
void runUF1_fn (int updatePair, int i, char *dbname, char
*userid, char *passwd)
{
    int rc = 0;
    int split_updates = 2; /* no. of ways update records are
split */
    int concurrent_inserts = 2; /* jenCI no of concurrent
updates to be */
    /* jenCI run at once*/
    int loop_updates = 1; /* jenCI no of updates to be run
in one */
    /* jenCI "concurrent" invocation.
should*/
    /* jenCI be split_updates /
concurrent_inserts*/
    int startChunk = 0; /* jenCI number of first chunk to
insert for */
    /* jenCI this child */
    int stopChunk = 0; /* jenCI number of last chunk to
insert for */
    /* jenCI this child */
    long insertedLineitem = 0; /*kmw*/
    long insertedOrders = 0; /*kmw*/
    long saveInsertedOrders = 0; /*kbs*/

    long sqlcode;
    int maxwait;

#ifdef SQLWINT
    int su_semid;
    key_t su_semkey;
#else
    HANDLE su_hSem;
    char UF1_semfile[256];
#endif

    char myoutstreamfile[256];
    FILE *myoutstream;

    strcpy(UF1_dbname, dbname);
    strcpy(UF1_userid, userid);
    strcpy(UF1_passwd, passwd);

    /* Get ready to start logging diagnostic output */
    sprintf(myoutstreamfile, UF1OUTSTREAMPATTERN,
env_tpcd_tmp_dir, PATH_DELIM,
updatePair, i);
    if ( (myoutstream = fopen (myoutstreamfile,
WRITEMODE)) == NULL)
    {
        fprintf(stderr, "\nThe output file '%s' for update pair %d
set %d could not be opened. runUF1_fn\n",
myoutstreamfile, updatePair, i);
        rc=-1;
        goto UF1_exit;
    }
}

```

```

    outstream=myoutstream; /* initialize outstream for
error_check dxxxxhar*/

    fprintf(myoutstream, "\nUF1 for update pair %d set %d
starting at %*. *s\n",
updatePair, i,
T_STAMP_1LEN, T_STAMP_1LEN, /*
TIME_ACC jen*/
get_time_stamp(T_STAMP_FORM_1, (Timer_struct
*)NULL)); /* TIME_ACC jen*/

    if (getenv ("TPCD_SPLIT_UPDATES") != NULL)
        split_updates = atoi (getenv
("TPCD_SPLIT_UPDATES"));
    if (getenv ("TPCD_CONCURRENT_INSERTS") !=
NULL) /*jenCI*/
        concurrent_inserts = atoi (getenv
("TPCD_CONCURRENT_INSERTS")); /*jenCI*/
    loop_updates = split_updates / concurrent_inserts;
/*jenCI*/

    /* determine the starting and stopping point of the chunks
that this jenCI*/
    /* invocation will apply. i is starting chunk number with
range 0 jenCI*/
    /* through (concurrent_inserts -1)
jenCI*/
    startChunk = i * loop_updates;
/*jenCI*/
    stopChunk = startChunk + (loop_updates - 1);
/*jenCI*/

    /* Establish a connection to the database */
    if (!strcmp(userid, "0")) /** No authentication provided
**/
        EXEC SQL CONNECT TO :UF1_dbname;
    else
        EXEC SQL CONNECT TO :UF1_dbname USER
:UF1_userid USING :UF1_passwd;
    error_check();
    if (sqlca.sqlcode < 0)
    {
        rc=-1;
        goto UF1_exit;
    }

    /* Start processing each chunk in my range */
#ifdef UF1DEBUG
    fprintf(myoutstream, "Before loop_a startChunk = %d,
stopChunk = %d\n", startChunk, stopChunk);
    fflush(myoutstream);
#endif
    for ( UF1_chunk = startChunk; UF1_chunk <= stopChunk;
UF1_chunk++) /*jenCI*/
    { /*jenCI*/
        /* wlc 062797 */
        sqlcode = SQL_RC_E911;
        month = (short)UF1_chunk; /* Cast 'short' added bbe */
        maxwait = 1;
        rc = 0;

#ifdef UF1DEBUG
        fprintf(myoutstream, "Before While_a Chunk= %d
\n", UF1_chunk);
        fflush(myoutstream);
#endif
        /* Loop to handle any deadlocks */

```

```

while (sqlcode == SQL_RC_E911 && maxwait <=
MAXWAIT && rc==0)
{
    sqlcode = 0;
#ifdef UF1DEBUG
    fprintf (myostream, "in loop before orders exec sql\n");
    fflush(myostream);
#endif
    EXEC SQL INSERT INTO TPCD.ORDERS
    SELECT
    O_ORDERKEY,O_CUSTKEY,O_ORDERSTATUS,O_TO
    TALPRICE,
    O_ORDERDATE,O_ORDERPRIORITY,O_CLERK,O_SHI
    PRIORITY,O_COMMENT
    FROM TPCDTEMP.ORDERS_NEW
    WHERE APP_ID = :UF_chunk;
    /*AND 12*(YEAR(O_ORDERDATE)-
    1992)+MONTH(O_ORDERDATE)-01 = :month;*/

    if (sqlca.sqlcode < 0)
        sqlcode = error_check();

    if (sqlcode == SQL_RC_E911)
    {
        /* we've hit a deadlock */
        fprintf (myostream,
            "\nDeadlock detected inserting from
            tpcdtemp.orders_new for chunk %d for pair
            %d..Retrying...\n",UF_chunk,updatePair);
        SleepSome(UF_DEADLOCK_SLEEP);
        maxwait++;
        /* jen DEADLOCK
        */
    }
    else if (sqlcode < 0)
    {
        fprintf(myostream,
            "Insert into orders pair %d chunk %d failed
            sqlcode=%d\n",
            updatePair,UF_chunk,sqlcode);
        dumpCa(&sqlca);
        rc = -1;
    }
    else
    {
        /* Everything worked with ORDERS, proceed with
        LINEITEM */
        saveInsertedOrders = sqlca.sqlerrd[2];

        sqlcode = 0;
#ifdef UF1DEBUG
        fprintf (myostream, "in lineitem for update pair
        number %d set %d chunk %d\n",
            updatePair, i,UF_chunk);
        fflush(myostream);
#endif

        EXEC SQL INSERT INTO TPCD.LINEITEM
        SELECT
        L_ORDERKEY,L_PARTKEY,L_SUPPKEY,L_LINENUM
        BER,L_QUANTITY,
        L_EXTENDEDPRICE,L_DISCOUNT,L_TAX,
        L_RETURNFLAG,L_LINESTATUS,L_SHIPDATE,L_CO
        MMITDATE,L_RECEIPTDATE,
        L_SHIPINSTRUCT,L_SHIPMODE,L_COMMENT
        FROM TPCDTEMP.LINEITEM_NEW WHERE
        APP_ID = :UF_chunk;
        /*(AND L_ORDERKEY IN

```

```

(SELECT O_ORDERKEY FROM
TPCD.ORDERS
WHERE 12*(YEAR(O_ORDERDATE)-
1992)+MONTH(O_ORDERDATE)-01 = :month);*/

if (sqlca.sqlcode < 0)
    sqlcode = error_check();

if (sqlcode == SQL_RC_E911)
{
    /* we've hit a deadlock */
    fprintf (myostream,
        "\nA deadlock has been detected inserting
        from tpcdtemp.lineitem%d_%d..Retrying...\n",
        updatePair, UF_chunk);
    SleepSome(UF_DEADLOCK_SLEEP);
    maxwait++;
    /* jen DEADLOCK
    */
}
else if (sqlcode < 0)
{
    fprintf(myostream,
        "Insert into lineitem pair %d chunk %d failed
        sqlcode=%d\n",
        updatePair,UF_chunk,sqlcode);
    dumpCa(&sqlca);
    rc = -1;
}
else
{
#ifdef UF1DEBUG
    fprintf (myostream, "lineitem insert
    succeeded\n");
    fflush(myostream);
#endif
    /* accumulate the number of row inserted */
    /* Order count ONLY updated if both orders and
    lineitem */
    /* go through */
    insertedOrders += saveInsertedOrders;
    /*
    kbs */
    insertedLineitem += sqlca.sqlerrd[2];
    rc=0;
    EXEC SQL COMMIT WORK;
    error_check();

#ifdef UF1DEBUG
    /* report the number of row inserted */
    fprintf(myostream, " interim %ld rows for
    chunk %d into TPCD.ORDERS at %*.*s\n",
        insertedOrders,UF_chunk,T_STAMP_1LEN,T_STAMP_1L
    EN, /* TIME_ACC jen*/

    get_time_stamp(T_STAMP_FORM_1,(Timer_struct
    *)NULL)); /* TIME_ACC jen*/
    /* report the number of row deleted *s inserted */
    fprintf(myostream,
        " interim %ld rows for chunk %d into
        TPCD.LINEITEM at %*.*s\n",
        insertedLineitem,UF_chunk,
        T_STAMP_1LEN,T_STAMP_1LEN, /*
        TIME_ACC jen*/
        get_time_stamp(T_STAMP_FORM_1,
            (Timer_struct *)NULL)); /*
        TIME_ACC jen*/

    fprintf( myostream,
        " inserts for update pair %d chunk %d
        complete at %*.*s\n",
        updatePair, UF_chunk,

```

```

        T_STAMP_1LEN,T_STAMP_1LEN, /*
TIME_ACC jen*/
        get_time_stamp(T_STAMP_FORM_1,
            (Timer_struct *)NULL)); /*
TIME_ACC jen*/

#endif
    }
    } /* process lineitem INSERTs */
    } /* while loop for deadlocks */
    } /* while processing chunks */

    /* report the number of row deleted */
    fprintf(myoutstream, "%ld rows inserted into
TPCD.ORDERS at %*.*s\n",
        insertedOrders,T_STAMP_1LEN,T_STAMP_1LEN,
/* TIME_ACC jen*/
        get_time_stamp(T_STAMP_FORM_1,(Timer_struct
*)NULL)); /* TIME_ACC jen*/
    fprintf(myoutstream, "%ld rows inserted into
TPCD.LINEITEM at %*.*s\n",

insertedLineitem,T_STAMP_1LEN,T_STAMP_1LEN, /*
TIME_ACC jen*/
        get_time_stamp(T_STAMP_FORM_1,(Timer_struct
*)NULL)); /* TIME_ACC jen*/

    if (sqlcode < 0)
    {
        if (sqlcode == SQL_RC_E911)
        {
            fprintf (myoutstream, "# of deadlocks exceeds %i\n",
MAXWAIT);
        }
        rc=-1;
        EXEC SQL ROLLBACK WORK;
        error_check(); /* @d22275 tlg */

        goto UF1_exit;
    }

/* UF1_conn_reset: */
EXEC SQL CONNECT RESET;
error_check(); /* @d22275 tlg */

UF1_exit:
    fclose (myoutstream);
    /* exiting, increment the semaphore */

    /* we used the first flat file to generate the semaphore key
*/

#ifdef SQLWINT
    /* we will use the tpcd.setup file to generate the
semaphore key begin SEMA */
    if (getenv("TPCD_AUDIT_DIR") != NULL)
    {
        /* this is assuming that you will be running this from 0th
node */
        sprintf(sourcefile, "%s%ctools%ctpcd.set up",
            getenv("TPCD_AUDIT_DIR"),
PATH_DELIM,PATH_DELIM);
    }
    else
    {
        fprintf (stderr, "Can't open UF1 semaphore file
TPCD_AUDIT_DIR is not defined.\n");
        exit (-1);
    }
}

```

```

/* end SEMA */

su_semkey = ftok (sourcefile, 'J');
while ( (su_semid = semget (su_semkey, 1, 0)) < 0)
{
    if (errno == ENOENT) {
        sleep(2);
    }
    else {
        fprintf(stderr,"update set %d: semget failed errno =
%d\n",
            i, errno);
        exit(1);
    }
}
if (sem_op (su_semid, 0, 1) != 0) /*jen
SEMA*/
{
    fprintf(stderr,"Failure to increment semaphore UF1 set
%d\n",i);
    fprintf(stderr," semaphore sourcefile = %s su_semid =
su_semid\n",sourcefile);
    exit(1);
} /*jenSEMA*/

#else /* SQLWINT */
    sprintf (UF1_semaphore, "%s.%s.UF1.semfile",
        getenv("TPCD_DBNAME"), getenv("USER"));
    fprintf(stderr,"UF1 semfile = %s\n",UF1_semaphore);
    while ((su_hSem =
OpenSemaphore(SEMAPHORE_ALL_ACCESS |
                SEMAPHORE_MODIFY_STATE |
                SYNCHRONIZE,
                TRUE,
                UF1_semaphore))
        == (HANDLE)(NULL))
    {
        /*
        ** if cannot open the semaphore, wait for 0.1 second
        */
        fprintf(stderr,"Retry Open semaphore %s\n",
UF1_semaphore);

        sleep(1);
    }

    if (! ReleaseSemaphore(su_hSem,
        1,
        (LPLONG)(NULL)))
    {
        fprintf(stderr, "ReleaseSemaphore failed, LastError: %d,
quit\n",
            GetLastError());
        exit(1);
    }
}
#endif /* SQLWINT */
    exit(rc); /* child exiting after finishing up */
}

/*****
*****/

/* UF2 child */
/*****
*****/

void runUF2_fn ( int updatePair, int thisConcurrentDelete,
int numChunks, char *dbname, char *userid, char *passwd )
{
    int rc = 0;

```

```

long sqlcode;
int maxwait;
int startChunk = thisConcurrentDelete*numChunks; /*
where do we start? */
long deletedLineitems = 0; /*kmw*/
long deletedOrders = 0; /*kmw*/
long savedDeletedLineitems = 0; /*kbs*/

#ifdef SQLWINT
int su_sem; /* semaphore for controlling split
updates*/
key_t su_semkey; /* key to generate semid */
#else
HANDLE su_hSem;
char UF2_semf[256];
#endif

char myoutstreamfile[256];
FILE *myoutstream, *src_fh=NULL;

strcpy(UF_dbname, dbname);
strcpy(UF_userid, userid);
strcpy(UF_passwd, passwd);

/* Generate the unique filename for this concurrent delete
process */
sprintf(myoutstreamfile, UF2OUTSTREAMPATTERN,
env_tpcd_tmp_dir, PATH_DELIM,
updatePair, thisConcurrentDelete);
if ( (myoutstream = fopen(myoutstreamfile,
WRITEMODE)) == NULL)
{
fprintf(stderr,
"\n\nThe output file '%s' for update pair %d set %d
could not be opened runUF2_fn.\n",
myoutstreamfile, updatePair, thisConcurrentDelete);
rc=-1;
goto UF2_exit;
}

outstream=myoutstream; /* initialize outstream for
error_check dxxxxhar*/

#ifdef UF2DEBUG
fprintf(myoutstream, "RunUF2 Called %d %d %d\n",
updatePair, thisConcurrentDelete,
numChunks);
fflush(myoutstream);
#endif
fprintf(myoutstream,
"\n\nUF2 for update pair %d set %d starting at
%*.s\n",
updatePair, thisConcurrentDelete,
T_STAMP_1LEN, T_STAMP_1LEN, /* TIME_ACC jen*/
get_time_stamp(T_STAMP_FORM_1, (Timer_struct
*)NULL)); /* TIME_ACC jen*/

#ifdef UF2DEBUG
fprintf(myoutstream, "before connect \n");
fflush(myoutstream);
#endif

if (!strcmp(userid, "0")) /** No authentication provided
**/
EXEC SQL CONNECT TO :UF_dbname;
else
EXEC SQL CONNECT TO :UF_dbname USER
:UF_userid USING :UF_passwd;
error_check();

```

```

#ifdef UF2DEBUG
fprintf(myoutstream, "after connect startchunk= %d,
EndChunk = %d\n",
startChunk, startChunk+numChunks);
fflush(myoutstream);
#endif

/* Start processing each chunk in my range */
for ( UF_chunk = startChunk; UF_chunk <
startChunk+numChunks; UF_chunk++)
{
/* Set things up for the loop which will retry if there is a
deadlock */
sqlcode = SQL_RC_E911;
month = (short)UF_chunk;
maxwait = 1;
rc = 0;

#ifdef UF2DEBUG
fprintf(myoutstream, "Chunk = %d\n", UF_chunk);
fflush(myoutstream);
#endif
while (sqlcode == SQL_RC_E911 && maxwait <=
MAXWAIT && rc == 0)
{

#ifdef UF2DEBUG
fprintf(myoutstream, "in loop before orders exec sql\n");
fflush(myoutstream);
#endif
sqlcode = 0;

EXEC SQL DELETE FROM TPCD.LINEITEM
WHERE L_ORDERKEY IN
(SELECT O_ORDERKEY FROM
TPCDTEMP.ORDERS_DEL
WHERE APP_ID = :UF_chunk);
/*AND O_ORDERKEY IN
(SELECT O_ORDERKEY FROM
TPCD.ORDERS
WHERE 12*(YEAR(O_ORDERDATE)-
1992)+MONTH(O_ORDERDATE)-01 = :month));*/
if (sqlca.sqlcode < 0)
sqlcode = error_check();

if (sqlcode == SQL_RC_E911)
{
/* we've hit a deadlock */
fprintf(myoutstream,
"\n\nA deadlock detected while deleting from
LINEITEM: update pair %d set %d chunk %d. Retrying.\n",
updatePair, thisConcurrentDelete, UF_chunk);
dumpCa(&sqlca);
SleepSome(UF_DEADLOCK_SLEEP);
maxwait++; /* jen DEADLOCK */
}
else if (sqlcode < 0)
{
fprintf(myoutstream, "\n\n%s\n", stmt_str.data);
fprintf(myoutstream, "\n\nsqlcode %d occurred deleting
from TPCD.LINEITEM\n", sqlca.sqlcode);
dumpCa(&sqlca);
fprintf(myoutstream,
"for update pair number %d set %d chunk
%d..Exiting\n",
updatePair, thisConcurrentDelete, UF_chunk);
rc=-1;
}
else

```

```

{
    /* accumulate the number of row deleted */
    savedDeletedLineitems = sqlca.sqlerrd[2]; /*kbs*/

#ifdef UF2DEBUG
    fprintf (myostream, "in loop for update pair number
%d set %d chunk %d\n",
            updatePair, thisConcurrentDelete, UF_chunk);
    fflush(myostream);
#endif

    /* delete the orders now */

    EXEC SQL DELETE FROM TPCD.ORDERS
    WHERE O_ORDERKEY IN
    (SELECT O_ORDERKEY FROM
    TPCDTEMP.ORDERS_DEL WHERE APP_ID =
    :UF_chunk);
    /*AND 12*(YEAR(O_ORDERDATE)-
    1992)+MONTH(O_ORDERDATE)-01 = :month;*/

    if (sqlca.sqlcode < 0)
        sqlcode = error_check();

    if (sqlcode == SQL_RC_E911)
    {
        /* we've hit a deadlock */
#ifdef UF2DEBUG
        fprintf (myostream, "orders deadlocked\n");
        fflush(myostream);
#endif
        fprintf (myostream,
            "\nA deadlock detected while deleting from
ORDERS: update pair %d set %d chunk %d. Retrying.\n",
            updatePair, thisConcurrentDelete, UF_chunk);
        dumpCa(&sqlca);
        SleepSome(UF_DEADLOCK_SLEEP);
        maxwait++; /* jen DEADLOCK */
    }
    else if (sqlcode < 0)
    {
#ifdef UF2DEBUG
        fprintf (myostream, "orders failed\n");
        fflush(myostream);
#endif
        fprintf (myostream, "\nAn error %d occurred
deleting from TPCD.ORDERS\n", sqlca.sqlcode);
        dumpCa(&sqlca);
        fprintf (myostream, "for update pair number %d
set %d chunk %d..Exiting\n",
            updatePair, thisConcurrentDelete, UF_chunk);
        rc=-1;
    }
    else
    {
#ifdef UF2DEBUG
        fprintf (myostream, "orders succeeded\n");
        fflush(myostream);
#endif
        /* accumulate the number of row deleted */
        /* Order count ONLY updated if both orders and
lineitem */
        /* go through */
        deletedLineitems += savedDeletedLineitems; /*
kbs */
        deletedOrders += sqlca.sqlerrd[2];
        rc=0;
        EXEC SQL COMMIT WORK;
        error_check();
#ifdef UF2DEBUG
        /* report the number of rows deleted */

```

```

        fprintf(myostream, " interim %ld rows for
chunk %d from TPCD.ORDERS at %*.*\n",

deletedOrders, UF_chunk, T_STAMP_1LEN, T_STAMP_1LE
N, /* TIME_ACC jen*/

get_time_stamp(T_STAMP_FORM_1, (Timer_struct
*)NULL)); /* TIME_ACC jen*/
        fprintf(myostream, " interim %ld rows for
chunk %d from TPCD.LINEITEM at %*.*\n",

deletedLineitems, UF_chunk, T_STAMP_1LEN, T_STAMP_1
LEN, /* TIME_ACC jen*/

get_time_stamp(T_STAMP_FORM_1, (Timer_struct
*)NULL)); /* TIME_ACC jen*/
        fprintf( myostream,
            " deletes for update pair %d chunk %d
complete at %*.*\n\n",
            updatePair, UF_chunk,
            T_STAMP_1LEN, T_STAMP_1LEN, /*
TIME_ACC jen*/
            get_time_stamp(T_STAMP_FORM_1,
            (Timer_struct *)NULL)); /*
TIME_ACC jen*/
    }
} /* process orders deletes */
} /* while trying to delete one chunk loop */
} /* while there are more chunks */

#ifdef UF2DEBUG
    fprintf (myostream, "after loop\n");
    fflush(myostream);
#endif
    /* report the number of row deleted */
    fprintf(myostream, "%ld rows deleted from
TPCD.ORDERS at %*.*\n",
        deletedOrders, T_STAMP_1LEN, T_STAMP_1LEN,
/* TIME_ACC jen*/
        get_time_stamp(T_STAMP_FORM_1, (Timer_struct
*)NULL)); /* TIME_ACC jen*/
    fprintf(myostream, "%ld rows deleted from
TPCD.LINEITEM at %*.*\n",

deletedLineitems, T_STAMP_1LEN, T_STAMP_1LEN, /*
TIME_ACC jen*/
        get_time_stamp(T_STAMP_FORM_1, (Timer_struct
*)NULL)); /* TIME_ACC jen*/

    if (sqlca.sqlcode < 0)
    {
        fprintf (myostream, "# of deadlocks %d exceeds %i\n",
            maxwait, MAXWAIT);
        rc=-1;
        EXEC SQL ROLLBACK WORK;
        error_check(); /* @d22275 tjg */
    }

/* UF2_conn_reset: */ /*971101jen*/
EXEC SQL CONNECT RESET;
error_check(); /* @d22275 tjg */

UF2_exit:
    fclose (myostream);

    /* exiting, increment the semaphore */
#ifdef SQLWINT

```



```

/* we used the tpcd.setup file to generate the semaphore
key   begin SEMA */
if (getenv("TPCD_AUDIT_DIR") != NULL)
{
    sprintf(sourcefile, "%s%ctools%ctpcd.setup",
            getenv("TPCD_AUDIT_DIR"), PATH_DELIM,
PATH_DELIM);
}
else
{
    fprintf(stderr, "Can't open UF2 semaphore file
TPCD_AUDIT_DIR is not defined.\n");
    exit (-1);
}

su_semkey = ftok (sourcefile, 'D'); /* use D for deletes */
/* end SEMA */
while ((su_semid = semget(su_semkey,1,0)) < 0)
{
    if (errno == ENOENT)
        sleep(2);
    else {
        fprintf(stderr, "UF2 update stream %d: semget failed
errno = %d\n",
            updatePair, errno);
        exit(1);
    }
}
if (sem_op (su_semid, 0, 1) != 0 ) /*jenSEM*/
{
    /*jenSEM*/
    fprintf(stderr, "Failure to increment semaphore UF2 set
%d\n", thisConcurrentDelete);
    exit(1);
}
/*jenSEM*/

#else
    sprintf (UF2_semfile, "%s.%s.UF2.semfile",

```

```

            getenv("TPCD_DBNAME"), getenv("USER"));
    fprintf(stderr, "UF2 semfile = %s\n", UF2_semfile);
    while ((su_hSem =
OpenSemaphore(SEMAPHORE_ALL_ACCESS |
                SEMAPHORE_MODIFY_STATE |
                SYNCHRONIZE,
                TRUE,
                UF2_semfile))
        == (HANDLE)(NULL)) {
        /*
        ** if cannot open the semaphore, wait for 0.1 second
        */
        fprintf(stderr, "Retry Open semaphore %s\n",
UF2_semfile);

        SleepSome(1);
    }

    if (! ReleaseSemaphore(su_hSem,
                            1,
                            (LPLONG)(NULL)))
    {
        fprintf(stderr, "ReleaseSemaphore failed, LastError: %d,
quit\n",
            GetLastError());
        exit(-1);
    }
#endif

    exit(rc); /* child exiting after finishing up */
}

```

Appendix E: ACID Transaction Source Code

acid.h

```
/*
*****
*****
*/
/* File: acid.h */
/*
*****
*****
*/

#include <stdio.h>
#include <stdlib.h>
#include <time.h>

#ifdef SQLWINT
#include <windows.h>
#include <sys/timeb.h>
#include <sys/stat.h>
#include <stdlib.h>
#include <io.h>
#else
#include <unistd.h>
#include <sys/time.h>
#include <sys/timeb.h>
#endif

#include <string.h>
#include <math.h>

#define acidtime(tvsec,tvusec) tvsec*1000+tvusec/1000
#define TSLEN 20

#if 0 /* needed on NT, not on AIX */
typedef struct timeval {
    long tv_sec; /* seconds */
    long tv_usec; /* and microseconds */
};
#endif

struct update_struct {
    int qnum;
};

struct acidQ_struct {
    int tag;
    long o_key;
    double l_extendedprice;
};

struct acidT_struct {
    int termination;
    int tag;
    int logging;
    long o_key;
    long l_key;
    long delta;
    long l_partkey;
    long l_suppkey;
    double l_quantity;
    double l_tax;
    double l_discount;
    double l_extendedprice;
    double o_totalprice;
};

/*
** in acid.sqc
*/
```

```
int updateQ (struct update_struct *us);
```

```
char del(void);
```

```
#ifdef SQLWINT
void sleep (int sec);
#endif
```

acid.sqc

```
/*
*****
*****
*/
/* File: acid.sqc */
/*
*****
*****
*/

/* changes:
*
* 961109 jel add EXEC SQL CLOSE for each cursor in
acidT
* to avoid bug in db2pe v1r2
* 980225 gav port to NT
* 981103 kal added ast_acidQ for isolation test 7
* 981103 kal changed ast query to be the same as that
used in
* consistency tests. Fixed so the long lprice is
* cast to a double. Changed so uses 3 decimal
points of
* precision.
*/

#include "acid.h"

#if (defined(SQLPTX) || defined(SQLWINT) ||
defined(SQLSUN) || defined(Linux))
double nearest(double);
#endif /* SQLPTX */

#define DEADLOCK -911

/*
#define TRUNC2(d) ((floor((d)*100.0))/100.0)
*/
/*
#define TRUNC2(d) ((floor(nearest((d)*100.0)))*0.01)
*/
/*
#define TRUNC2(d)
((floor(nearest((d)*1000.0)/10.0)/100.0))
*/
/*
#define TRUNC2(d)
((floor(nearest((d)*100000.0)/1000.0)/100.0))
*/

void sqlerror(char *, struct sqlca *);

EXEC SQL INCLUDE SQLCA;
EXEC SQL BEGIN DECLARE SECTION;
char dbname[8]; /* = "tpcd"; */
EXEC SQL END DECLARE SECTION;
```

```

#ifdef SQLWINT

/*
** redefine gettimeofday so I don't have to
** change too much aix-specific code
*/
/*#typedef struct timeval { unsigned tv_sec; unsigned
tv_usec; }; */
typedef struct timezone { int dummy; };
struct timeb timer;

void gettimeofday( struct timeval *tv, struct timezone *tz)
{
    ftime(&timer);
    tv->tv_sec = timer.time;
    tv->tv_usec = timer.millitm * 1000;
    tz->dummy = 0;
}
#endif

/*-----*/
/*      acidQ                                */
/*-----*/
int acidQ (struct acidQ_struct *acid)
{
    time_t timeT;
    FILE *out;
    char out_fn[50];
    struct timeval tv;
    struct timezone tz;
    int mypid;
    int rc = 0;

    EXEC SQL BEGIN DECLARE SECTION;
    sqlint32  okey;
    sqlint32  lEprice;
    double  eprice;
    EXEC SQL END DECLARE SECTION;

    okey = acid->o_key;

    /* mypid = getpid(); */
    mypid = acid->tag;

    sprintf(out_fn,
"%s%cacidQ.out.%d",getenv("TPCD_TMP_DIR"),del(),myp
id);
    out=fopen(out_fn,"a");
    if (out == NULL)
    {
        fprintf(stderr, "ERROR input file %s could not be
appended to!!\n",out_fn);
    }

    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out,"\n----- START of acidQ tag: %d -----
\n\n",mypid);
    fprintf(out, "acidQ tag: %d, begin transaction time: (%us
%06uu) %s",
        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
    fprintf(out, "okey: %d\n", okey);

    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out, "acidQ tag: %d, before read of LINEITEM:
(%us %06uu) %s",
        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));

```

```

/*
** use the same sql code as used in the consistsql.pl to
** run the consistency acid queries. Note we assign an
long int
** to lEprice (we make it 10s of pennies by * 1000). Then
divide
** by 1000.0 and cast it to a double (eprice) for printing
*/

EXEC SQL
SELECT

INTEGER(DECIMAL(SUM(DECIMAL(INTEGER(INTEG
ER(DECIMAL

(INTEGER(100*DECIMAL(L_EXTENDEDPRICE,20,3)),
20,3) *
        (1-L_DISCOUNT)) * (1+L_TAX)),20,3)/100.0),20,3)
* 1000)
    into :lEprice
FROM
    TPCD.LINEITEM
WHERE
    L_ORDERKEY = :okey;

if (sqlca.sqlcode != 0) {
    rc = sqlca.sqlcode;
    fprintf(out,"acidQ **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
    sqlerror("acidQ: select sum(l_extendedprice)", &sqlca);
    goto Qerror;
}
eprice = (double)lEprice / 1000.0; /* translate to double for
printout*/

gettimeofday(&tv, &tz);
time(&timeT);
fprintf(out,"ACID tag: %d, after read of LINEITEM: (%us
%06uu) %s",
    mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
fprintf(out, "okey: %d \t sum(l_extendedprice): %0.3f\n",
    okey, eprice);

EXEC SQL COMMIT;
if (sqlca.sqlcode != 0) {
    rc = sqlca.sqlcode;
    fprintf(out,"acidQ **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
    sqlerror("acidQ: COMMIT", &sqlca);
    goto Qerror;
}
acid->l_extendedprice = eprice;

rc = 0;
goto Qexit;

Qerror:
EXEC SQL rollback work;
if (sqlca.sqlcode != 0) sqlerror("acidQ: ROLLBACK
FAILED", &sqlca);

Qexit:
fprintf(out,"\n----- END of acidQ tag: %d -----
\n\n",mypid);
fflush(out);fclose(out);
return(rc);
}

/*-----*/
/*      ast_acidQ                                */
/*-----*/

```

```

/*-----*/
int ast_acidQ (struct acidQ_struct *acid)
{
    time_t timeT;
    FILE *out;
    char out_fn[50];
    struct timeval tv;
    struct timezone tz;
    int mypid;
    int rc = 0;

    EXEC SQL BEGIN DECLARE SECTION;
    double ast_lEprice;
    double ast_eprice;
    EXEC SQL END DECLARE SECTION;

    /* mypid = getpid(); */
    mypid = acid->tag;

    sprintf(out_fn,
"%s%cast_acidQ.out.%d",getenv("TPCD_TMP_DIR"),delQ,
mypid);
    out=fopen(out_fn,"a");
    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out,"----- START of ast_acidQ tag: %d -----
--\n\n",mypid);
    fprintf(out, "ast_acidQ tag: %d, begin transaction time:
(%us %06uu) %s",
        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));

    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out,"ast_acidQ tag: %d, before read of LINEITEM:
(%us %06uu) %s",
        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));

    /*
    ** use the same query acidQ except don't select for specific
    okay.
    ** this ensures that the ast will be used instead of the base
    table
    ** Have to use ast_lEprice as double since this sum is so
    big
    */
    EXEC SQL
    SELECT
    SUM ( L_EXTENDEDPRISE*(1-L_DISCOUNT)*(1 +
L_TAX))
    into :ast_lEprice
    FROM
    TPCD.LINEITEM;

    if (sqlca.sqlcode != 0) {
        rc = sqlca.sqlcode;
        fprintf(out,"ast_acidQ **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
        sqlerror("ast_acidQ: select sum(l_extendedprice)",
        &sqlca);
        goto Qerror;
    }
    ast_eprice = ast_lEprice; /* use ast_eprice for printout to
be consistent*/

    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out,"AST_ACID tag: %d, after read of LINEITEM:
(%us %06uu) %s",

```

```

        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
    fprintf(out, "sum(l_extendedprice): %0.3fn",
        ast_eprice);

    EXEC SQL COMMIT;
    if (sqlca.sqlcode != 0) {
        rc = sqlca.sqlcode;
        fprintf(out,"ast_acidQ **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
        sqlerror("ast_acidQ: COMMIT", &sqlca);
        goto Qerror;
    }
    acid->l_extendedprice = ast_eprice;

    rc = 0;
    goto Qexit;

Qerror:
    EXEC SQL rollback work;
    if (sqlca.sqlcode != 0) sqlerror("ast_acidQ: ROLLBACK
FAILED", &sqlca);

Qexit:
    fprintf(out,"----- END of ast_acidQ tag: %d -----
\n\n",mypid);
    fflush(out);fclose(out);
    return(rc);
}
/*-----*/
/* acidT */
/*-----*/
int acidT (struct acidT_struct *acid)
{
    time_t timeT;
    FILE *out;
    char out_fn[50];
    struct timeval tv;
    struct timezone tz;
    int mypid;
    int rc = 0;

    EXEC SQL BEGIN DECLARE SECTION;
    sqlint32 o_key, l_key, delta;
    sqlint32 l_partkey, l_suppkey;
    double l_quantity, l_tax, l_discount, l_extendedprice;
    double o_totalprice;
    double new_quantity, rprice, cost, new_extprice,
new_ototal, ototal;
    EXEC SQL END DECLARE SECTION;

    EXEC SQL DECLARE l_cursor CURSOR FOR
    SELECT l_partkey, l_suppkey, l_quantity,
    l_tax, l_discount,
    l_extendedprice
    FROM tpcd.lineitem
    WHERE l_orderkey = :o_key
    AND l_linenum = :l_key
    FOR UPDATE OF l_extendedprice, l_quantity;

    EXEC SQL DECLARE o_cursor CURSOR FOR
    SELECT o_totalprice
    FROM tpcd.orders
    WHERE o_orderkey = :o_key
    FOR UPDATE OF o_totalprice;

    if (acid->termination < 0 || acid->termination > 3) acid-
>termination = 0;
    o_key = acid->o_key;
    l_key = acid->l_key;

```

```

delta = acid->delta;

if (acid->logging) {
    /* mypid = getpid(); */
    mypid = acid->tag;
    sprintf(out_fn,
"%s%cacidT.out.%d",getenv("TPCD_TMP_DIR"),del(),mypid);
    out=fopen(out_fn,"a");
    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out,"n----- START of acidT tag: %d -----
\n\n",mypid);
    fprintf(out, "acidT tag: %d, begin transaction time: (%s
%06uu) %s",
        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
    fprintf(out, "o_key: %d\tl_key: %d\tdelta: %d\n", o_key,
l_key, delta);
}
#ifdef DEBUG
    printf("o_key: %d\tl_key: %d\tdelta: %d\n", o_key, l_key,
delta);
#endif

retry_tran:

    if (acid->logging) {
        gettimeofday(&tv, &tz);
        time(&timeT);
        fprintf(out,"acidT tag: %d, before read of LINEITEM:
(%s %06uu) %s",
            mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
    }

    EXEC SQL OPEN l_cursor;
    if (sqlca.sqlcode != 0) {
        if (sqlca.sqlcode == DEADLOCK) goto retry_tran;
        rc = sqlca.sqlcode;
        if (acid->logging) {
            fprintf(out,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
        } else {
            fprintf(stderr,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
        } /* endif */
        sqlerror("acidT: OPEN l_cursor", &sqlca);
        goto TError;
    }

    EXEC SQL FETCH l_cursor INTO
:l_partkey, :l_suppkey, :l_quantity, :l_tax,
:l_discount, :l_extendedprice;
    if (sqlca.sqlcode != 0) {
        if (sqlca.sqlcode == DEADLOCK) goto retry_tran;
        rc = sqlca.sqlcode;
        if (acid->logging) {
            fprintf(out,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
        } else {
            fprintf(stderr,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
        } /* endif */
        sqlerror("acidT: FETCH l_cursor", &sqlca);
        goto TError;
    }

#ifdef DEBUG
    printf("l_quantity = %0.3f\n",l_quantity);
    printf("l_tax = %0.3f \n",l_tax);
    printf("l_discount = %0.3f \n",l_discount);

```

```

    printf("l_extendedprice = %0.3f \n", l_extendedprice);
#endif

    if (acid->logging) {
        gettimeofday(&tv, &tz);
        time(&timeT);
        fprintf(out,"acidT tag: %d, after read of LINEITEM:
(%s %06uu) %s",
            mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
        fprintf(out, "l_partkey: %d l_suppkey: %d l_quantity:
%0.3f\nl_tax: %0.3f l_discount: %0.3f l_extendedprice:
%0.3f\n",
            l_partkey, l_suppkey, l_quantity, l_tax, l_discount,
l_extendedprice);
    }

    rprice = TRUNC2( l_extendedprice/l_quantity );
    cost = TRUNC2( rprice * delta );
    new_extprice = l_extendedprice + cost;
    new_quantity = l_quantity + delta;

#ifdef DEBUG
    printf("rprice = %0.3f\n", rprice );
    printf("cost = %0.3f\n", cost );
    printf("new_extprice = %0.3f\n", new_extprice );
    printf("new_quantity = %0.3f\n", new_quantity );
#endif

    EXEC SQL UPDATE tpcd.lineitem
    SET l_extendedprice = :new_extprice,
        l_quantity = :new_quantity
    WHERE CURRENT OF l_cursor;

    if (sqlca.sqlcode != 0) {
        if (sqlca.sqlcode == DEADLOCK) goto retry_tran;
        rc = sqlca.sqlcode;
        if (acid->logging) {
            fprintf(out,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
        } else {
            fprintf(stderr,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
        } /* endif */
        sqlerror("acidT: UPDATE l_cursor", &sqlca);
        goto TError;
    }

    if (acid->logging) {
        gettimeofday(&tv, &tz);
        time(&timeT);
        fprintf(out,"acidT tag: %d, after update of LINEITEM:
(%s %06uu) %s",
            mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
        fprintf(out, "updated l_extendedprice: %0.3f\n",
new_extprice );
        fprintf(out, "updated l_quantity: %0.3f\n", new_quantity
);
    }

    /* if (acid->termination == 0) {
        EXEC SQL CLOSE l_cursor;
        EXEC SQL CLOSE o_cursor;
        EXEC SQL COMMIT;
        if (sqlca.sqlcode != 0) {
            if (sqlca.sqlcode == DEADLOCK) goto retry_tran;
            rc = sqlca.sqlcode;
            if (acid->logging) {
                fprintf(out,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
            } else {

```

```

        fprintf(stderr,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
    }
    sqlerror("acidT: COMMIT", &sqlca);
    goto Terror;
}
} */

if (acid->logging) {
    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out,"acidT tag: %d, before read of ORDER: (%us
%06uu) %s",
        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
}

EXEC SQL OPEN o_cursor;
if (sqlca.sqlcode != 0) {
    if (sqlca.sqlcode == DEADLOCK) goto retry_tran;
    rc = sqlca.sqlcode;
    if (acid->logging) {
        fprintf(out,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
    } else {
        fprintf(stderr,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
    } /* endif */
    sqlerror("acidT: OPEN o_cursor", &sqlca);
    goto Terror;
}

EXEC SQL FETCH o_cursor INTO :o_totalprice;
if (sqlca.sqlcode != 0) {
    if (sqlca.sqlcode == DEADLOCK) goto retry_tran;
    rc = sqlca.sqlcode;
    if (acid->logging)
    {
        fprintf(out,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
    }
    else
    {
        fprintf(stderr,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
    }
    sqlerror("acidT: FETCH o_cursor", &sqlca);
    goto Terror;
}

#ifdef DEBUG
    printf("o_totalprice = %0.3f\n",o_totalprice);
#endif

if (acid->logging) {
    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out,"acidT tag: %d, after read of ORDER: (%us
%06uu) %s",
        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
    fprintf(out, "o_totalprice: %0.3f\n", o_totalprice);
}

#ifdef DEBUG
{
    double zeroone= l_extendedprice * (1.0- l_discount);
    double zeroonetimes= (l_extendedprice * (1.0-
l_discount))*100.0;
    double firstone = TRUNC2(l_extendedprice * (1.0-
l_discount));

```

```

    double notone= TRUNC2 ( l_extendedprice * (1.0-
l_discount)) * (1.0+l_tax);
    double secondone= TRUNC2( TRUNC2( l_extendedprice
* (1.0-l_discount) ) * (1.0+l_tax) );
    printf("firstone= %f\n", firstone);
    printf("zeroone= %f\n", zeroone);
    printf("zeroonetimes= %f\n", zeroonetimes);
    printf("notone= %f\n", notone);
    printf("secondone= %f\n", secondone);
}
#endif

ototal = o_totalprice -
    TRUNC2( TRUNC2( l_extendedprice * (1-
l_discount) ) * (1+l_tax) );
new_ototal = TRUNC2( new_extprice * (1.0-l_discount) );
new_ototal = TRUNC2( new_ototal * (1.0+l_tax) );
new_ototal = ototal + new_ototal;

#ifdef DEBUG
    printf("o_totalprice= %f\n",o_totalprice);
    printf("ototal= %0.3f\n",ototal);
    printf("ototal= %f\n",ototal);
    printf("new_ototal= %0.3f\n",new_ototal);
#endif

EXEC SQL UPDATE tpcd.orders
    SET o_totalprice = :new_ototal
    WHERE CURRENT OF o_cursor;
if (sqlca.sqlcode != 0) {
    if (sqlca.sqlcode == DEADLOCK) goto retry_tran;
    rc = sqlca.sqlcode;
    if (acid->logging) {
        fprintf(out,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
    } else {
        fprintf(stderr,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
    } /* endif */
    sqlerror("acidT: UPDATE o_cursor", &sqlca);
    goto Terror;
}

if (acid->logging) {
    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out,"acidT tag: %d, after update of ORDER: (%us
%06uu) %s",
        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
    fprintf(out, "updated o_totalprice: %0.3f\n", new_ototal) ;
}

/*
** why is this code in here? we don't want to
** commit until the history table has been updated as well
if (acid->termination == 0) {
    EXEC SQL CLOSE L_CURSOR;
    EXEC SQL CLOSE O_CURSOR;
    EXEC SQL COMMIT;
    if (sqlca.sqlcode != 0) {
        if (sqlca.sqlcode == DEADLOCK) goto retry_tran;
        rc = sqlca.sqlcode;
        if (acid->logging) {
            fprintf(out,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
        } else {
            fprintf(stderr,"acidT **ERROR** sqlcode =
%d\n",sqlca.sqlcode);
        }
        sqlerror("acidT: COMMIT", &sqlca);
        goto Terror;
    }
}

```

```

    }
}
*/

if (acid->logging) {
    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out, "acidT tag: %d, before insert into HISTORY: (%us %06uu) %s",
        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
}

EXEC SQL INSERT INTO tpcd.history values
(:l_partkey, :l_supplekey, :o_key, :l_key, :delta,
CURRENT TIMESTAMPT);
if (sqlca.sqlcode != 0) {
    if (sqlca.sqlcode == DEADLOCK) goto retry_tran;
    rc = sqlca.sqlcode;
    if (acid->logging) {
        fprintf(out, "acidT **ERROR** sqlcode = %d\n", sqlca.sqlcode);
    } else {
        fprintf(stderr, "acidT **ERROR** sqlcode = %d\n", sqlca.sqlcode);
    } /* endif */
    sqlerror("acidT: INSERT INTO history", &sqlca);
    goto TError;
}

if (acid->logging) {
    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out, "acidT tag: %d, after insert into HISTORY: (%us %06uu) %s",
        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
}

/* sleep for 1 second for 80% of the transactions */
#ifdef SQLWINT
    if ( ((rand() % (100)) + 1) < 80 ) sleep(1);
#else
    if ( ((random() % (100)) + 1) < 80 ) sleep(1);
#endif

switch (acid->termination) {
case 1:
    {
        if (acid->logging)
        {
            gettimeofday(&tv, &tz);
            time(&timeT);
            fprintf(out, "acidT tag: %d, wait before COMMIT: (%us %06uu) %s",
                mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
        }
    }
    sleep(60);
case 0:
    if (acid->logging) {
        gettimeofday(&tv, &tz);
        time(&timeT);
        fprintf(out, "acidT tag: %d, immediately before COMMIT: (%us %06uu) %s",
            mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
    }
    EXEC SQL CLOSE L_CURSOR;
    EXEC SQL CLOSE O_CURSOR;
    EXEC SQL COMMIT;
    if (sqlca.sqlcode != 0) {
        if (sqlca.sqlcode == DEADLOCK) goto retry_tran;
    }
}

```

```

    rc = sqlca.sqlcode;
    if (acid->logging) {
        fprintf(out, "acidT **ERROR** sqlcode = %d\n", sqlca.sqlcode);
    } else {
        fprintf(stderr, "acidT **ERROR** sqlcode = %d\n", sqlca.sqlcode);
    } /* endif */
    sqlerror("acidT: COMMIT", &sqlca);
    goto TError;
}

if (acid->logging) {
    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out, "acidT tag: %d, after COMMIT: (%us %06uu) %s",
        mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
}
break;
case 3:
    if (acid->logging) {
        gettimeofday(&tv, &tz);
        time(&timeT);
        fprintf(out, "acidT tag: %d, wait before ROLLBACK: (%us %06uu) %s",
            mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
    }
    sleep(60);
case 2:
    if (acid->logging) {
        gettimeofday(&tv, &tz);
        time(&timeT);
        fprintf(out, "acidT tag: %d, immediately before ROLLBACK: (%us %06uu) %s",
            mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
    }
    EXEC SQL CLOSE L_CURSOR;
    EXEC SQL CLOSE O_CURSOR;
    EXEC SQL rollback work;
    if (sqlca.sqlcode != 0) {
        if (sqlca.sqlcode == DEADLOCK) goto retry_tran;
        rc = sqlca.sqlcode;
        if (acid->logging) {
            fprintf(out, "acidT **ERROR** sqlcode = %d\n", sqlca.sqlcode);
        } else {
            fprintf(stderr, "acidT **ERROR** sqlcode = %d\n", sqlca.sqlcode);
        } /* endif */
        sqlerror("acidT: ROLLBACK", &sqlca);
        goto TError;
    }
    if (acid->logging) {
        gettimeofday(&tv, &tz);
        time(&timeT);
        fprintf(out, "acidT tag: %d, after ROLLBACK: (%us %06uu) %s",
            mypid, tv.tv_sec, tv.tv_usec, ctime(&timeT));
    }
    break;
}

acid->l_partkey = l_partkey;
acid->l_supplekey = l_supplekey;
acid->l_quantity = l_quantity;
acid->l_tax = l_tax;
acid->l_discount = l_discount;
acid->l_extendedprice = l_extendedprice;
acid->o_totalprice = o_totalprice;

```

```

rc = 0;
goto Texit;

Terror:
    EXEC SQL CLOSE L_CURSOR;
    EXEC SQL CLOSE O_CURSOR;
    EXEC SQL rollback work;
    if (sqlca.sqlcode != 0) sqlerror("acidT: ROLLBACK
FAILED", &sqlca);

Texit:
    if (acid->logging) {
        fprintf(out, "\n----- END of acidT tag: %d -----
\n\n", mypid);
        fflush(out); fclose(out);
    }
    return(rc);
}

/*-----*/
/*      updateQ                                */
/*-----*/
int updateQ (struct update_struct *us)
{
    FILE *out;
    time_t timeT;
    struct timeval tv;
    struct timezone tz;
    int qnum;
    int rc = 0;
    int i;
    int secs2sleep;
    char buff[256];
    struct acidtype {int logging;} a, *acid;

    EXEC SQL BEGIN DECLARE SECTION;
    double  acctbal;
    double  discount;
    double  price;
    sqlint32 availqty;
    sqlint32 size;
    EXEC SQL END DECLARE SECTION;

    qnum = us->qnum;

    acid = &a;
    acid->logging = 1;

    sprintf(buff,
"%s%cupdate.out", getenv("TPCD_TMP_DIR"), del());
    out = fopen(buff, "a");

    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out, "\n----- START of update ----- \n\n");
    fprintf(out, "update query number: %d, begin transaction
time: (%us %06uu) %s",
        qnum, tv.tv_sec, tv.tv_usec, ctime(&timeT));

    sqlca.sqlcode = 0;
    discount = 0.25;
    price = 5000.50;
    acctbal = 1000.00;
    availqty = 10;
    size = 5;

    for (i=1; i <= 2; i++) {
        gettimeofday(&tv, &tz);
        time(&timeT);

```

```

        fprintf(out, "update query number: %d, pass %d,
immediately before UPDATE: (%us %06uu) %s",
            qnum, i, tv.tv_sec, tv.tv_usec, ctime(&timeT));

        switch (qnum)
        {
            case 1:
            {
                EXEC SQL
                UPDATE TPCD.LINEITEM set L_DISCOUNT =
                L_DISCOUNT + :discount
                WHERE L_ORDERKEY IN (326,512,928,995);
                if (sqlca.sqlcode != 0) {
                    rc = sqlca.sqlcode;
                    if (acid->logging)
                    {
                        fprintf(out, "update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
                            qnum, i, sqlca.sqlcode);
                    }
                }
                else
                {
                    fprintf(stderr, "update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
                        qnum, i, sqlca.sqlcode);
                }
                sqlerror("update query number 1", &sqlca);
                goto Uerror;
            }
            discount = discount * (-1);
            secs2sleep = 300;
            break;
        }
        case 2:
        {
            EXEC SQL
            UPDATE TPCD.SUPPLIER set S_ACCTBAL =
            S_ACCTBAL + :acctbal
            WHERE S_NAME in
            ('Supplier#000000647','Supplier#000000070','Supplier#0000
00802');
            if (sqlca.sqlcode != 0) {
                rc = sqlca.sqlcode;
                if (acid->logging)
                {
                    fprintf(out, "update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
                        qnum, i, sqlca.sqlcode);
                }
            }
            else
            {
                fprintf(stderr, "update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
                    qnum, i, sqlca.sqlcode);
            }
            sqlerror("update query number 2", &sqlca);
            goto Uerror;
        }
        acctbal = acctbal * (-1);
        secs2sleep = 90;
        break;
    }
    case 3:
    {
        EXEC SQL
        UPDATE TPCD.LINEITEM set L_DISCOUNT =
        L_DISCOUNT + :discount
        WHERE L_ORDERKEY IN (260930, 402497,
457859, 509889, 58117,

```



```

538311, 588421, 416167, 97830,
90276);
if (sqlca.sqlcode != 0) {
    rc = sqlca.sqlcode;
    if (acid->logging)
    {
        fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
    }
    else
    {
        fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
    }
    sqlerror("update query number 3", &sqlca);
    goto Uerror;
}
discount = discount * (-1);
secs2sleep = 300;
break;
}
case 4:
{
    if ( i ==1 ) {
        EXEC SQL
            UPDATE TPCD.ORDERS set O_ORDERDATE =
O_ORDERDATE - 6 MONTHS
            WHERE O_ORDERKEY = 67461;
            /* WHERE O_ORDERKEY IN
(22400,28515,34338,46596,67461,92644,98307);*/
    } else {
        EXEC SQL
            UPDATE TPCD.ORDERS set O_ORDERDATE =
O_ORDERDATE + 6 MONTHS
            WHERE O_ORDERKEY = 67461;
    }
    if (sqlca.sqlcode != 0) {
        rc = sqlca.sqlcode;
        if (acid->logging)
        {
            fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
                qnum, i, sqlca.sqlcode);
        }
        else
        {
            fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
                qnum, i, sqlca.sqlcode);
        }
        sqlerror("update query number 4", &sqlca);
        goto Uerror;
    }
    secs2sleep = 300;
    break;
}
case 5:
{
    EXEC SQL
        UPDATE TPCD.LINEITEM set L_DISCOUNT =
L_DISCOUNT + :discount
        WHERE L_ORDERKEY IN
(70976,566279,152897,84226,232483);
    if (sqlca.sqlcode != 0) {
        rc = sqlca.sqlcode;
        if (acid->logging)
        {

```

```

        fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
        }
    }
    else
    {
        fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
    }
    sqlerror("update query number 5", &sqlca);
    goto Uerror;
}
discount = discount * (-1);
secs2sleep = 300;
break;
}
case 6:
{
    EXEC SQL
        UPDATE TPCD.LINEITEM set L_DISCOUNT =
L_DISCOUNT + :discount
        WHERE L_ORDERKEY IN
(33,131,161,195,229,230,231,323,353,356);
    if (sqlca.sqlcode != 0) {
        rc = sqlca.sqlcode;
        if (acid->logging)
        {
            fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
                qnum, i, sqlca.sqlcode);
        }
        else
        {
            fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
                qnum, i, sqlca.sqlcode);
        }
        sqlerror("update query number 6", &sqlca);
        goto Uerror;
    }
    discount = discount * (-1);
    secs2sleep = 300;
    break;
}
case 7:
{
    EXEC SQL
        UPDATE TPCD.LINEITEM set L_DISCOUNT =
L_DISCOUNT + :discount
        WHERE L_ORDERKEY IN
(562917,410659,16550,398401,157634,429920,45411);
    if (sqlca.sqlcode != 0) {
        rc = sqlca.sqlcode;
        if (acid->logging)
        {
            fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
                qnum, i, sqlca.sqlcode);
        }
        else
        {
            fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
                qnum, i, sqlca.sqlcode);
        }
        sqlerror("update query number 7", &sqlca);
        goto Uerror;
    }
    discount = discount * (-1);

```

```

secs2sleep = 300;
break;
}
case 8:
{
EXEC SQL
UPDATE TPCD.LINEITEM set L_DISCOUNT =
L_DISCOUNT + :discount
WHERE L_ORDERKEY IN
(129569,343591,270242,254983,98500,28963);
if (sqlca.sqlcode != 0) {
rc = sqlca.sqlcode;
if (acid->logging)
{
fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
qnum, i, sqlca.sqlcode);
}
}
else
{
fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
qnum, i, sqlca.sqlcode);
}
sqlerror("update query number 8", &sqlca);
goto Uerror;
}
discount = discount * (-1);
secs2sleep = 300;
break;
}
case 9:
{
EXEC SQL
UPDATE TPCD.LINEITEM set L_DISCOUNT =
L_DISCOUNT + :discount
WHERE L_ORDERKEY IN
(113509,232997,246691,379233,448162,32134);
if (sqlca.sqlcode != 0) {
rc = sqlca.sqlcode;
if (acid->logging)
{
fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
qnum, i, sqlca.sqlcode);
}
}
else
{
fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
qnum, i, sqlca.sqlcode);
}
sqlerror("update query number 9", &sqlca);
goto Uerror;
}
discount = discount * (-1);
secs2sleep = 300;
break;
}
case 10:
{
EXEC SQL
UPDATE TPCD.LINEITEM set L_DISCOUNT =
L_DISCOUNT + :discount
WHERE L_ORDERKEY IN
(516487,245411,265799,253025,6914,562020);
if (sqlca.sqlcode != 0) {
rc = sqlca.sqlcode;
if (acid->logging)
{

```

```

fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
qnum, i, sqlca.sqlcode);
}
}
else
{
fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
qnum, i, sqlca.sqlcode);
}
}
sqlerror("update query number 10", &sqlca);
goto Uerror;
}
discount = discount * (-1);
secs2sleep = 300;
break;
}
case 11:
{
EXEC SQL
UPDATE TPCD.PARTSUPP set PS_AVAILQTY =
PS_AVAILQTY + :availqty
WHERE PS_PARTKEY IN
(12098,5134,13334,17052,3452,12552,1084,5797);
if (sqlca.sqlcode != 0) {
rc = sqlca.sqlcode;
if (acid->logging)
{
fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
qnum, i, sqlca.sqlcode);
}
}
else
{
fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
qnum, i, sqlca.sqlcode);
}
}
sqlerror("update query number 11", &sqlca);
goto Uerror;
}
availqty = availqty * (-1);
secs2sleep = 180;
break;
}
case 12:
{
if ( i ==1 ) {
EXEC SQL
UPDATE TPCD.LINEITEM set
L_RECEIPTDATE = L_RECEIPTDATE - 3 YEARS
WHERE L_ORDERKEY IN
(33,70,195,355,677,837,960,962,1028);
} else {
EXEC SQL
UPDATE TPCD.LINEITEM set
L_RECEIPTDATE = L_RECEIPTDATE + 3 YEARS
WHERE L_ORDERKEY IN
(33,70,195,355,677,837,960,962,1028);
}
if (sqlca.sqlcode != 0) {
rc = sqlca.sqlcode;
if (acid->logging)
{
fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
qnum, i, sqlca.sqlcode);
}
}
else
{

```

```

        fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
        qnum, i, sqlca.sqlcode);
    }
    sqlerror("update query number 12", &sqlca);
    goto Uerror;
}
secs2sleep = 300;
break;
}
case 13:
{
    EXEC SQL
    UPDATE TPCD.LINEITEM set L_DISCOUNT =
L_DISCOUNT + :discount
    WHERE L_ORDERKEY IN
(263,9476,32355,34854,53445,56901);
    if (sqlca.sqlcode != 0) {
        rc = sqlca.sqlcode;
        if (acid->logging)
        {
            fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
        }
        else
        {
            fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
        }
        sqlerror("update query number 13", &sqlca);
        goto Uerror;
    }
    discount = discount * (-1);
    secs2sleep = 90;
    break;
}
case 14:
{
    EXEC SQL
    UPDATE TPCD.LINEITEM set L_DISCOUNT =
L_DISCOUNT + :discount
    WHERE L_ORDERKEY IN
(32,225,326,448,449,483,512);
    if (sqlca.sqlcode != 0) {
        rc = sqlca.sqlcode;
        if (acid->logging)
        {
            fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
        }
        else
        {
            fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
        }
        sqlerror("update query number 14", &sqlca);
        goto Uerror;
    }
    discount = discount * (-1);
    secs2sleep = 180;
    break;
}
case 15:
{
    EXEC SQL

```

```

    UPDATE TPCD.LINEITEM set L_DISCOUNT =
L_DISCOUNT + :discount
    WHERE L_ORDERKEY IN (1,4,7,35,135,131300);
    if (sqlca.sqlcode != 0) {
        rc = sqlca.sqlcode;
        if (acid->logging)
        {
            fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
        }
        else
        {
            fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
        }
        sqlerror("update query number 15", &sqlca);
        goto Uerror;
    }
    discount = discount * (-1);
    secs2sleep = 180;
    break;
}
case 16:
{
    EXEC SQL
    UPDATE TPCD.PART set P_SIZE = P_SIZE + :size
    WHERE P_PARTKEY IN (4,7,15,1313);
    if (sqlca.sqlcode != 0) {
        rc = sqlca.sqlcode;
        if (acid->logging)
        {
            fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
        }
        else
        {
            fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
        }
        sqlerror("update query number 16", &sqlca);
        goto Uerror;
    }
    size = size * (-1);
    secs2sleep = 180;
    break;
}
case 17:
{
    EXEC SQL
    UPDATE TPCD.LINEITEM set
L_EXTENDEDPRI = L_EXTENDEDPRI + :price
    WHERE L_ORDERKEY IN
(4065,110372,165061,265702,87138);
    if (sqlca.sqlcode != 0) {
        rc = sqlca.sqlcode;
        if (acid->logging)
        {
            fprintf(out,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
        }
        else
        {
            fprintf(stderr,"update query number: %d, pass %d,
**ERROR** sqlcode = %d\n",
            qnum, i, sqlca.sqlcode);
        }
    }
}

```

```

    }
    sqlerror("update query number 17", &sqlca);
    goto Uerror;
}
price = price * (-1);
secs2sleep = 90;
break;
}
default:
{
    fprintf(out, "ERROR: Invalid query number specified
%d\n", qnum);
    rc = 1;
    goto Uexit;
}
}

gettimeofday(&tv, &tz);
time(&timeT);

if (acid->logging)
    fprintf(out, "update query number: %d, pass %d, after
UPDATE: (%us %06uu) %s",
        qnum, i, tv.tv_sec, tv.tv_usec, ctime(&timeT));
else
    fprintf(stderr, "update query number: %d, pass %d, after
UPDATE: (%us %06uu) %s",
        qnum, i, tv.tv_sec, tv.tv_usec, ctime(&timeT));

if (i == 2) {
    gettimeofday(&tv, &tz);
    time(&timeT);
    fprintf(out, "update query number: %d, pass %d,
sleeping for %d seconds: (%us %06uu) %s",
        qnum, i, secs2sleep, tv.tv_sec, tv.tv_usec,
ctime(&timeT));
    fflush(out);
    system("touch /tmp/tpcd/update.sync.sleep");
    sleep(secs2sleep);
}

gettimeofday(&tv, &tz);
time(&timeT);
fprintf(out, "update query number: %d, pass %d,
immediately before COMMIT: (%us %06uu) %s",
    qnum, i, tv.tv_sec, tv.tv_usec, ctime(&timeT));

EXEC SQL COMMIT;
if (sqlca.sqlcode != 0) {
    rc = sqlca.sqlcode;
    fprintf(out, "update pass %d, **ERROR** sqlcode =
%d\n", i, sqlca.sqlcode);
    sqlerror("update: COMMIT", &sqlca);
    goto Uerror;
}
gettimeofday(&tv, &tz);
time(&timeT);
if (acid->logging)
    fprintf(out, "update query number: %d, pass %d, after
COMMIT: (%us %06uu) %s",
        qnum, i, tv.tv_sec, tv.tv_usec, ctime(&timeT));
else
    fprintf(stderr, "update query number: %d, pass %d, after
COMMIT: (%us %06uu) %s",
        qnum, i, tv.tv_sec, tv.tv_usec, ctime(&timeT));
}

rc = 0;
goto Uexit;

```

```

Uerror:
EXEC SQL rollback work;
if (sqlca.sqlcode != 0) sqlerror("update: ROLLBACK
FAILED", &sqlca);
system("touch /tmp/tpcd/update.sync.sleep");

Uexit:
fprintf(out, "\n----- END of update ----- \n\n");
fflush(out); fclose(out);
return(rc);
}

/*-----*/
/* connect_to_TM */
/*-----*/
void connect_to_TM( void )
{
    char *dbname_ptr;
    if ((dbname_ptr = getenv("TPCD_QUAL_DBNAME")) !=
NULL) {
        fprintf(stderr, "***** %s
*****\n", dbname_ptr);
        strcpy (dbname, dbname_ptr);
    }

EXEC SQL CONNECT TO :dbname IN SHARE MODE;
if (sqlca.sqlcode < 0) {
    fprintf(stderr, "CONNECT TO %s failed SQLCODE =
%d\n", dbname, sqlca.sqlcode);
    exit(-1);
}
return;
}

/*-----*/
/* disconnect_from_TM */
/*-----*/
void disconnect_from_TM ( void )
{
EXEC SQL CONNECT RESET;
if (sqlca.sqlcode < 0) {
    fprintf(stderr, "DISCONNECT failed SQLCODE =
%d\n", sqlca.sqlcode);
    exit(-1);
}
return;
}

/*-----*/
/* sqlerror */
/*-----*/
void sqlerror(char *msg, struct sqlca *psqlca)
{
    FILE *err_fp;

    char err_fn[256];

    int j,k;

    sprintf(err_fn,
"%s%cacid.sqlerrors", getenv("TPCD_TMP_DIR"), del());
    err_fp=fopen(err_fn, "a");
    fprintf(err_fp, "acid: sqlcode: %4d %s\n", psqlca->sqlcode,
msg);
    fprintf(stderr, "acid: sqlcode: %4d %s\n", psqlca->sqlcode,
msg);
    fflush(stderr);
    if (psqlca->sqlerrmc[0] != ' ' || psqlca->sqlerrmc[1] != ' ') {

```

```

    fprintf(err_fp,"acid: slerrmc: ");
    for(j = 0; j < 5; j++)
    {
        for(k = 0; k < 14; k++) fprintf(err_fp,"%x ", psqlca-
>sqlerrmc[j*10+k]);
        fprintf(err_fp," ");
        for(k = 0; k < 14; k++) fprintf(err_fp,"%c", psqlca-
>sqlerrmc[j*10+k]);
        fprintf(err_fp,"\n");
        if (j < 4) fprintf(err_fp,"    ");
    }
}

fprintf(err_fp,"acid: sqlerrp: ");
for(j = 0; j < 8; j++) fprintf(err_fp,"%c", psqlca-
>sqlerrp[j]);
fprintf(err_fp,"\n");

fprintf(err_fp,"acid: sqlerrd: ");
for(j = 0; j < 6; j++) fprintf(err_fp," %d", psqlca-
>sqlerrd[j]);
fprintf(err_fp,"\n");

if (psqlca->sqlwarn[0] != ' ') {
    fprintf(err_fp,"acid: sqlwarn: ");
    for(j = 0; j < 8; j++) fprintf(err_fp,"%c ", psqlca-
>sqlwarn[j]);
    fprintf(err_fp,"\n");
}

fprintf(err_fp,"\n");
fflush(err_fp);fclose(err_fp);
}

#ifdef SQLWINT
void sleep(int sec)
{
    Sleep(sec * 1000);
}
#endif

char del(void)
{
#ifdef SQLWINT
    return "\\";
#else
    return '/';
#endif
}

```

```

#ifdef SQLPTX || defined(SQLWINT) ||
defined(SQLSUN) || defined(Linux)
/* added for PTX as this one is not there in libm */
double nearest(double x)
{
    double y, z;

    y = x;
    if (x < 0)
        y = -x;
    z = y - (int)y;
    if (z == 0.5) {
        if ((int)floor(y) % 2) {
            return((x < 0) ? -ceil(y) : ceil(y));
        } else {
            return((x < 0) ? -floor(y) : floor(y));
        }
    } else if (z < 0.5)
        return((x < 0) ? -floor(y) : floor(y));
    else
        return((x < 0) ? -ceil(y) : ceil(y));
}
#endif /* SQLPTX */

```

nt_compile.bat

```

db2start
db2 connect to %1
db2 prep acid.sqc bindfile package isolation rr
db2 connect reset
db2 terminate

cl -c -Zi -DTPCD_V2 -DWIN32 -DSQLWINT -D_X86_=1 -
W3 -J mainacid.c acid.c

```

```

REM !!!! The compilation of the mainacid program
absolutely requires
REM !!!! including the COMMODE.OBJ file.
REM !!!! This is used to avoid NT file buffering -gav
REM Attempting to link with COMMODE.OBJ ...
link -debug -out:mainacid.exe commode.obj mainacid.obj
acid.obj -align:0x1000 "user32.lib" "kernel32.lib" db2api.lib
-subsystem:console

```

Appendix G: Price Quotations



Route 100
Somers, NY 10589

June 27, 2003

Roman Klamke,
Maxdata,
Germany.

Dear Mr. Klamke:

The table shown below lists the Germany pricing for DB2 Universal Database Enterprise Server Edition product that has been used in TPC-H Benchmark test.

All prices shown are in Euros.

Enterprise Server Edition	PPA sku	Qty	Pricing	Extended I Cost
SW License & Maintenance to 1st Annlv.	D518GLL	4	23,141	92,564
SW Maintenance Renewal - 1 year	E00BILL	4	1,102	4,408
SW Maintenance Renewal - 1 year	E00BILL	4	1,102	4,408
Total ESE				101,380

Database Partition Feature	PPA sku	Qty	Pricing	Extended I Cost
SW License & Maintenance to 1st Annlv.	D518JLL	4	6,951	27,804
SW Maintenance Renewal - 1 year	E00BJLL	4	331	1,324
SW Maintenance Renewal - 1 year	E00BJLL	4	331	1,324
Total DPF				30,452

TOTAL 3yr Cost				131,832
-----------------------	--	--	--	----------------

This quote is valid for 90 days.

If I can be of any further assistance, please contact me at 914-766-1325 or privot@us.ibm.com.

Yours Truly,

Paul Rivot
Director of DB2 Servers and Business Intelligence Software
Route 100
Somers, NY 10589

Quotation

Eurologic Systems, Ltd
Clonshaugh Industrial Estate
Clonshaugh, Dublin 17 Ireland
Tel: +353-1-866-1300
Fax: +353-1-848-3741
email: sales@eurologic.com
website: www.eurologic.com



Company: Maxdata
 Attention: Roman Klamke
 Address: _____

 Country: Germany
 Telephone: _____
 Fax: _____
 E-mail: roman.klamke@maxdata.de

Date:	25-Jun-03
Quote Number:	AM007-0094-B
Prepared By:	Robert Anderson
Contact Phone:	905-542-8482
Contact Email:	bob_anderson@adaptec.com
Notes:	Max-Data Standard VAR discounted Price's in Euros

Item Number	Qty	Model Number	Description	Unit Price	Extended Price
1	8	FC2101ODR2-AC	14-slot Rackmount, JBOD, dual Optical I/O modules, dual PSMs with dual AC inputs, dual ACMs, and dual LSMs. Includes Spheras Storage Examiner (SSE) JBOD software, manual on CD and quick install guide, and power cords. Does not include disk drive blanks, drives/carriers, cables and rackmount rail kit.	€ 3,295.00	€ 22,921.74
2	112	DISK-1815-S2S3	18.4 GB 15,000 rpm Fibre Channel Drive in Carrier (Seagate Cheetah 15K.3)	€ 250.00	€ 24,347.83
3	8	NRKIT-FC2000	Rackmount Rail Kit with user documentation, kit supports cabinets from 617.2-759.5 mm	€ 36.80	€ 256.00
4	14	CBL-OPTMLCLC-0.3	.3 Meter 2Gb Fibre Channel Optical Cable, Multi Mode, LC to LC (MFG part number OA33333-0.3M)	€ 67.20	€ 818.09
5	1	CAB29U-FC2000-E	19" 30U Cabinet w/Dual Power Distribution Units (PDU's) & Power Cords for Europe	€ 3,572.00	€ 3,106.09
6	8	GR2100J-PL-001	PLATINUM level support for JBOD 7x24x365	€ 1,825.00	€ 12,695.65
				TOTAL Euro	€ 64,145.33

Terms and Conditions

- * Quote valid for 30 days
 - * Subject to credit approval and availability
 - * Prices are listed in U.S. (\$) dollars
 - * All pricing excludes shipping and handling
 - * All shipments FOB Dublin, Ireland
 - * All quotes are subject to Eurologic Systems terms & conditions
 - * All products and pricing information is based on latest information available
- Subject to change without notice of obligation

Approved by _____